A chip off the old block

Privilege and upper class educational opportunities in the United States, South Korea, and Germany

Laia Sánchez Guerrero

Thesis submitted for assessment with a view to
obtaining the degree of Doctor of Political and Social Sciences
of the European University Institute

Florence, 16th May 2017 .

European University Institute
Department of Political and Social Sciences

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Department of Political and Social Sciences - Doctoral Programme

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Abstract

As the saying goes: there are some things that money cannot buy. Yet, scholars have tended to analyze the upper class as a homogeneous group, able to overcome any difficulty that life puts in their way to educational success. Nonetheless, the children of the upper class are subject to the disadvantages of a historically discriminated ethnicity, negatively stereotyped gender, and the boundaries of the institutional framework, among other things. By neglecting the heterogeneity of the upper class, the literature on the Inequalities of Educational Opportunities (IEO) has forgotten to test the limits of class privilege in education.

The most crucial point for fully comprehending the research that is being pursued here, is that this dissertation does not tackle whether the rich are simply doing better than the poor in school, or whether the gap between social classes is widening or shrinking. Instead, it focuses on the dynamics and limits of privilege. It analyzes how, in some contexts, the advantaged can be disadvantaged too. In other words, it aims to shed light on what happens when privilege meets disadvantage, and how the perks of being upper class vary among different social groups, such as blacks and whites in the US, or boys and girls in Germany. There are three main lessons to be learned from the three empirical chapters of this dissertation. First, privilege is multidimensional (chapter 3). Second, privilege is dynamic (chapter 4). Finally, privilege is contextual (chapter 5).

Lastly, one may wonder why the focus should be on upper-class children since they are, generally, the top performers in any country in the world. The reason is simple; because the dynamics of privilege are part of the IEO puzzle. Only by testing the limits of privilege will we be able to unravel the riddle that IEO poses.

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PREFACE

According to the Oxford dictionary, privilege is a *"special right, advantage, or immunity granted or available only to a particular person or group: education is a right, not a privilege"*. Whereas the first part of the definition is fairly accurate, the example given is unfortunate. So far, universal access to education has not been translated into equal opportunities. The children of the privileged keep outperforming the children of the disadvantaged in any country of the world. The educational gap is not the product of meritocratic processes, it is the result of putting privilege to work. So far, however, most research has focused on why and how the poor keep underperforming the rich, yet little is known about the privileged group.

To fully understand the research conducted, here we can view the educational career of an individual as similar to the process of erecting a building; a building the foundations of which are developed at the very early stages of life. The children of the upper class have better living conditions and cognitive stimulation during this early stage, which provides the building with concrete foundations. In contrast, the children of the poor have worse living conditions, which hamper the building of their education because of their weaker foundations. Yet, in addition to the foundations, a building needs pillars. In this case, the pillars would be the other factors that shape the "look" and robustness of the building, such as gender, ethnicity, and family composition. These pillars are of a different strength depending on whether the child is a boy or a girl, from an ethnic minority or not, lives in a biparental or single-parent family, etc. In this way, while all upper-class children have concrete foundations, the pillars on which their education is set result in different types of educational building. Obviously, the solid foundations of the upper class can lend a helping hand to overcome the challenge of building upon weaker pillars, but they do not make the challenge disappear. Previous research, however, has neglected the analysis of these challenges, and of how the institutional and social framework plays a role in the construction of educational careers among privileged social groups. This dissertation aims to disentangle the hardships and obstacles that privilege is - and is not - able to overcome.

The first chapter, *A chip off the old block*, is a compendium of the literature that has been developed on the subject of Inequalities of Educational Opportunities (IEO), the puzzles that remain unanswered, and how I attempt to tackle the analysis of the privileged groups in the following chapters. It is the backbone that articulates the dissertation, and constitutes the point of departure for the theories and empirical evidence developed in the following chapters. Because privilege is contextual and multidimensional, three institutional and sociocultural frameworks have been selected for empirical analysis: the United States of America (US), the Republic of Korea (Korea) and the Federal Republic of Germany (Germany). These three countries have very different institutional and socioeconomic structures. Consequently, privilege has been configured following different paths and logics. The second chapter of the dissertation gives a detailed description of the

three institutional and sociocultural frameworks. In addition, it exposes how the disparities affect to the processes under study.

As I faced the task of understanding how privilege works in the US, I became more and more aware of the significance of ethnicity in the social structure of the country. Chapter 3 *What money cannot buy: the perks of being white in the US education system,* seeks to shed light on how upper social class educational opportunities are conditioned by ethnicity in the US. In other words, how the erection of the educational building varies on account of the ethnicity pillar. Whereas a number of studies examine ethnic inequalities of opportunities among the broader population, and especially among the lower classes, very little is known about how the perks of being upper-class vary among ethnicities. This surprising negligence could have its origin in the assumption that the underachievement of blacks and Hispanics is the product of limited resources and disadvantaged environments. Under this assumption, upper-class blacks and Hispanics should achieve as much as their white and Asian counterparts, and, therefore, there should be no reason to be concerned for them. This research defies the aforementioned assumption: being upper class may help to overcome the obstacles that ethnic discrimination puts in the way, but it does not make them disappear. As a matter of fact, the chapter suggests that:

1. An upper-class black/Hispanic child is less likely to be a high achiever in mathematics or reading, but is more likely to be a bottom performer, than an Asian/white child. In addition, even if a black/Hispanic child manages to perform at a high level, (s)he is less stable as a top achiever. What is more, (s)he is more stable as a bottom performer.

2. An upper-class black/Hispanic child is as likely to be a high performer as is a lower-class white/Asian child. Hence, the upper-class lifestyle produces different results for ethnically discriminated minorities.

3. The educational gap among privileged groups is much wider than among the underprivileged.

Nonetheless, what are the mechanisms driving these disparities in education? Why do money and parental human capital not entail the same advantages for different ethnicities? Chapter 3 aims to give some answers to these questions.

Privilege is multidimensional and, above all, dynamic. Chapter 4, *The dynamics of privilege in the Republic of Korea education system*, analyzes parental decisions regarding their offspring's education, taking into account how past events may affect those decisions. First, the chapter considers private tutoring enrollment as a parental strategy to maximize the chances of class maintenance (for the upper class) or upward social mobility (for the working class). Second, it analyzes enrollment in private tutoring by taking a game theory approach in which parents face a Prisoner's Dilemma and must take into account the strategies of other parents when planning their own (A. Choi et al., 2010). At this point, it is crucial to highlight Lareau's findings: parents from different social class react differently to their children's achievement (Lareau, 2000, 2011). More precisely, Lareau found that working-class parents are more engaged in their children's education when their offspring perform well in school. The upper-class parents, in contrast, are most engaged when their children have difficulties in school. Chapter 4, builds upon Lareau's findings, and combines rational choice theories with the research conducted on the primary and

secondary effects of social origins (Boudon, 1973; Erikson, 2007; M. Jackson, 2013). Finally, it aims to disentangle if these "rational choices" payoff differently for different social classes.

The most striking result of chapter 4 is that parents do indeed follow a dynamic rational choice, especially those of the working class. First, the results indicate that upper-class parents tend to invest in private tutoring regardless of the past and present achievement level of their children. Still, they tend to invest more if their children are among the top 10% of their school class. Working-class investment in private tutoring is more dynamic and responds to the child's performance. In this vein, when a working-class child is among the highest performers of his/her school class, (s)he is as likely to enroll in private tutoring as a non-top achiever upper-class child. However, if the working-class child was not a high achiever in the previous year - even if (s)he is now - then his/her parents will tend to take back their investment, and they are as likely to invest in private tutoring as the parents of a working-class child who never made it. In other words, a working-class child needs to consistently beat the odds and be among at the top 10% of his/her class, and only then will his/her parents perceive the investment as worth it. If the child fails just once, then the parents will be uncertain of his/her educational chances and, consequently, take back their investment. Furthermore, this investment seems equally to boost the performance of the upper classes and working classes. This is to say, if the parents of a working-class high performer invest as much as the parents of an upper-class high performer, then their offspring will have similar chances to maintain good results. The upper-class failing students, in contrast, do not make much of the investment and, apparently, it is their class advantage rather than investment in private tutoring, that prevents them from failing too hard in education.

Another pillar affecting the "look" and robustness of the educational building is gender. Chapter 5 *"Ladies and gentleman: gendered privilege in Federal Republic of Germany"* aims to pinpoint how widespread gender stereotypes shape the educational advantages associated with the upper-class in Germany. In this regard, a number of studies have found that achievement in a domain is hindered when an individual perceives that a sociocultural group of which (s)he is part is negatively stereotyped in that domain (Ambady, Shih, Kim, & Pittinsky, 2001; Shih, Ambady, Richeson, Fujita, & Gray, 2002; Shih, Pittinsky, & Ambady, 1999; Spencer, Steele, & Quinn, 1999; Steele & Aronson, 1995). By the same token, when the individual is part of a positively stereotyped group, his/her performance in the domain is perked up (Ambady et al., 2001; Shih et al., 2002, 1999). In this sense, gender conveys both positive and negative stereotypes for boys and girls, depending on the domain under analysis. This is because whereas boys are categorized as being better at mathematics, girls are stereotyped as being better at languages. Consequently, while boys would be privileged in mathematics, girls would be privileged in languages. Finally, and according to my theory, while some individuals will add the perks of a positive gender stereotype to the benefits of a privileged social class, others may see their class advantage fade when coming into collision with a negative categorization. As a matter of fact, the results presented in the fifth chapter appear to corroborate this hypothesis. This is to say, whereas girls appear to add the benefits of a gender and class when gathering language skills, boys do this in mathematics. Still, the most interesting result is that the individuals who enjoy one source of (dis)advantage - either gender or social origins - mimic each others' chances of being an outstanding achiever in either domain. This is perhaps, because the performance of both is perked up by just one source of privilege. Perhaps, additionally, because it is also hindered by one source of disadvantage. The most worrying result, however, is that those

individuals suffering the "double trouble" of humble origins and a negative gender stereotype are those with the least chances to excel either in mathematics (lower-class girls) or languages (lower-class boys). As a result, the multidimensional nature of privilege and disadvantages, once again, appear to dent children's educational opportunities.

Last but not least, chapter 6 offers an insight into how these chapters were initially conceived. It also recalls the most interesting results of the dissertation and offers a discussion of their meaning. Still, this is just a first step towards a better understanding of the dimensions and dynamics of privilege and there is thus room for improvement. The last chapter of the dissertation, therefore, offers different alternatives for broadening our knowledge about how privilege affects the educational opportunities of children across countries. Nonetheless, I can anticipate the main conclusion of the dissertation: when the pillars of education are weak, the education building shakes, even when the foundations are made of hardcore concrete privilege.

CHAPTER 1

A CHIP OFF THE OLD BLOCK

In this chapter I present the puzzle of the dissertation as well as the research questions and case studies. For the most part, this chapter constitutes a path through the thesis. It presents a brief summary of the following chapters and the theories on which the research relies. In sum, this chapter is the backbone of the dissertation and, as such, the most important in order to fully understand the research that is being conducted.

1.1 Introduction

This research seeks to shed light on the dynamics by which privilege is transformed into educational advantage among the upper class. In addition, it aims to disentangle how ascription to other (dis)advantaged groups shapes the educational opportunities of the upper class in three different sociocultural and educational settings. Traditionally, upper social strata educational behavior has been neglected by most empirical analyses. The classical approach when analyzing Inequalities on Educational Opportunities (IEO) has been to focus on the lack of resources and opportunities among the working-class. Thus, researchers have tended to focus their attention on the evolution of the gap between social strata or the comparative disadvantage that working-class students suffer (Erikson, 2007; Goldthorpe & Jackson, 2008; Shavit & Blossfeld, 1993). This dissertation, in contrast, tackles the perks of being upper class.

Educational choices are made within an institutional framework. Although decisions are made at the individual level, the education system constitutes an external constraint on individual choices and behavior (Breen & Goldthorpe, 1997; Dronkers, Van der Velden, & Allison, 2011; Gambetta, 1987). The institutional framework has changed in the last few decades due to a process of educational expansion, which has been accompanied by a differentiation in the educational tracks that students can follow. And tracking by ability has meaningful effects on educational inequalities (Blau, 1970; Mare, 1980). The upper class, hence, needs to adapt to institutional boundaries to effectively translate their capital into effective advantage. The three different education systems selected have a different degree of curricula standardization[1] and tracking

[1]The level of curricula standardization is mainly a consequence of the degree of (de)centralization of educational

procedures. Moreover, because education is a cumulative process (H.-P. Blossfeld et al., 2011; Merton, 1968), a quantitative longitudinal analysis is needed in order to disentangle the dynamics of privilege in the educational process. For this reason, three educational panel data sets have been chosen as a main source of information, one for each country. In sum, this research aims to understand how and why the upper social strata invest their resources (either social, cultural or economic), bringing into the analysis the sociocultural and institutional framework. Only via this comprehensive analysis will we be able to understand what are the perks of being upper class in the three countries under analysis: the United States (US), the Republic of Korea (Korea) and the Federal Republic of Germany (Germany).

1.2 Puzzle and Research Questions

Research Question 1: What are the limits and the dynamics of privilege in education?

Recent research has shown that the academic achievement gap between rich and poor students is widening in the US but also that the growth in income inequality does not per se explain this growing gap (Reardon, 2011). Hence, it seems that money buys more educational success than it used to (Reardon, 2011), but little is known about the causal link between wealth and educational achievement in the upper social strata. Most of the research done tends to focus on the possession of capital (either cultural, economic or social) and the impact that its ownership has on educational achievement. Following the findings of Reardon (2011), I argue that it is not only a matter of capital possession; it is also a matter how capital is used. Some strategies lead to success, while others do not. And those strategies differ according to social strata (Lareau, 1987, 2000). By unraveling how past events shape the choices and behaviors relating to education, this research aims to shed light on the linking process that would appear to exist between social advantage and educational achievement.

Finally, one might ask why this research focuses on the educational strategies of the upper social strata as regards educational opportunities, and not on other forms of privileged social reproduction. The most important reason for this is because the object of analysis is not upper social strata reproduction per se; it is IEO. More precisely, I am not interested in the achievement gap between the least and most privileged social strata, but on the dynamics of privilege. Thus, the object of analysis is not whether the educational achievement gap is widening or shrinking; rather, it concerns how the upper social strata maintain their position on the privileged side of the gap and how different factors affect their educational performance.

Research Question 2: Does membership of other social groups affect the translation of class privilege into educational achievement?

To fully comprehend the research presented here we can view the educational career of an individual as similar to the process of constructing a building; a building the foundations of which are developed at the very early stages of life. The children of the upper class have better living conditions and cognitive stimulation during this stage, which gives them concrete foundations. In contrast, the children of the poor have worse living conditions, which hamper the building of their education by providing with weaker foundations. In addition, a building also needs pillars.

competences. As the system increases its centralization, so does the standardization of education quality nationwide, and vice versa.

In this case, the pillars would be the other factors that shape the "look" and robustness of the building, such as gender, ethnicity, and family composition among others. These pillars are of different strengths depending on whether the child is a boy or a girl, from an ethnic minority or not, lives in a biparental or single-parent family, etc. In this manner, while all upper-class children have concrete foundations, the pillars on which their education are set result in different types of educational building. Obviously, the solid foundations that the upper class provides help to overcome the challenge of building upon weaker pillars, but they do not make the challenge disappear.

In sum, this research understands privilege as a multidimensional and contextual element. An individual may enjoy the benefits of a privileged social class; however, the same individual may face the disadvantages of being from another underprivileged social group. This research aims to understand how the different pillars affect the construction of an educational career among upper-class children.

Research Question 3: How do different educational systems constrain the educational opportunities of the upper social strata?

Different institutional frameworks should lead to diverse educational opportunities, since strategies need to be adapted to the requirements and organization of different educational systems. In turn, the linking process between social privilege and academic performance should also vary with relation to the sociocultural and institutional framework. The different organization of the education system in Korea, Germany, and the US shape the educational choices and behavior of parents and children. The former case study randomly assigns children to schools within their district, the latter has freedom of choice as its dogma; Germany classifies by ability, and choice is constricted by achievement. Hence, parents and pupils must "play" according to the rules of the system, and implement strategies in accordance with it in order to succeed. Furthermore, the social structure and historical processes such as the legacy of slavery and racial segregation in the US must shape the ways in which privilege affects the educational opportunities of the children of the upper class. As a way of illustration, an upper-class black child does not have the same life conditions as white upper-class child, and this must affect the capacity of upper-class children to perform in education.[2]

Firstly, the **Republic of Korea** has a highly standardized educational system at elementary and middle secondary education, with a low level of stratification. This means that students are not sorted by ability at these stages, and that education meets the same quality standards all over the country. In addition, since 1974 the High School Equalization Policy (HSEP) randomly assigns pupils to a school within their district - following a lottery system - and even private schools are subject to this process. The procedure changes slightly for upper secondary education, when children can choose between a huge range of alternatives within academic and vocational training tracks. However, children are still randomly assigned to different institutions within their chosen option, and the vast majority selects the academic path. As a consequence of the low tracking and high standardization at secondary stages, selectivity starts at tertiary level. Universities and colleges differ in quality, and there are a few highly selective institutions, the so-called SKY universities [3]. Secondly, the **US** has a low stratified (also known as low tracking by ability) and

[2]The analysis of how ethnicity shapes upper class educational opportunities is presented in chapter 3.

[3]Korea's top three universities are Seoul National University (public), and Korea and Yonsey Universities (private).

standardized education system at the secondary stage of education. Curricula and the quality of education differ not only from state to state but also between districts. Moreover, students can customize their curricula from the 9th grade; thus, they are not sorted into different tracks until the age of 16 (approximately) but have room to chose advanced courses in the fields in which they are interested. Tertiary education is quite stratified, with a few highly selective and prestigious universities and low levels of standardization: each university develops its own curricula. Finally, **Germany** has a highly standardized education system in both the secondary and tertiary stages. This means that the quality of education meets the same standards nationwide. The tracking procedure by ability starts around the age of 10 (depending on theLänder), when most children are segregated according to different schools[4] depending on their achievement level. Lower secondary education can be vocational or academically oriented and it leads to different upper secondary school education institutions. After finishing the academic track, and passing the *Abitur*, children are entitled to tuition free tertiary education. While traditional universities do not differ much in quality, there is a lower tie tertiary education: the universities of the applied sciences. These institutions are more "practical" oriented, and may be more attractive for children of lower social classes.

Although the US and Korean systems might seem to share a similar organization, the differences are meaningful. As table 1.2 displays, there are relevant differences between both systems regarding school choice, curricula standardization, and who provides the education. Firstly, while in the US the provision is highly decentralized, producing several different systems on the basis of school districts, Korea has a highly centralized educational system. Secondly, parents in Korea cannot select the school their offspring attend, and they are assigned to an educational institution by a lottery system.[5] By contrast, American parents have a wide freedom of selection, not only within the private system but also in the public system, with different kind of schools (mainly, traditional schools, charter schools,[6] and magnet schools[7]). Thirdly, parents in the US can customize their children's educational process within the boundaries of the system, selecting advanced placement in some subjects. The curricula in Korea are much more uniform, and children on the same track have the same subjects and are liable to achieve the same academic standards. Finally, Germany contrasts with both. On the one hand, it is a decentralized system where the Federal States hold the responsibility for the provision of education. On the other hand, there is a certain degree of standardization nationwide thanks to the efforts of the Länder, but also to European Union regulations regarding equivalent leaving certificates. Although in some Federal States parents can choose a school, in others the school recommendation is binding. In addition, once children pass from elementary to secondary education the choices are even more limited by performance. The curricula is much the same across Federal States, but it still differs between tracks.

In brief, the theory developed in this dissertation claims that educational choices and behavior

The wordplay SKY refers to their initials, and at the same time, to their high position on the prestige hierarchy(Á. Choi, Calero, Escardíbul, et al., 2011)

[4]There has been, however, an increase of secondary institutions in which more than one track is taught.

[5]Assigning pupils randomly to schools within the district.

[6]Charter schools are independent public schools that enjoy higher flexibility than other public schools regarding the hiring of teachers, etc. In return for such autonomy, they have greater accountability for spending and academic performance.

[7]Magnet schools are usually specialized in one subject, such as the sciences, technology or arts. In contrast with charter schools, they are not open to children of all abilities, and very often require an entrance test.

	US	Germany	Korea
Educational Provision	Highly decentralized	Decentralized	Centralized
School choice	Wide freedom	Limited	Random Assignment
Curricula stratification	High	High	Low

Table 1.1: Characteristics of the Systems

are dynamic responses to, on the one hand, the institutional and social framework and, on the other, to past experiences such as academic performance. Following Allemendiger's theory (Allmendinger, 1989), my argument is that strategies interact with the institutional and social framework, and that the investment of capital (be it social, cultural or economic) will be constrained by the opportunities available.

1.3 Theoretical Background

1.3.1 Inequality of Educational Opportunity

Thus far, a number of studies have examined the achievement gap that persists between non-privileged and privileged social strata (Bernstein, 1964; Boudon, 1973; Erikson, 2007; Goldthorpe & Jackson, 2008; Mare, 1980; Shavit & Blossfeld, 1993). When analyzing this gap scholars have highlighted that the working classes have less social, cultural, and economic capital to invest in their offspring and, consequently, they have lower educational opportunities and achievement levels (B. Jackson & Marsden, 2011; MacLeod, 2010). The achievement gap between social groups, however, is not only a result of the lower social classes having less; it is also a consequence of upper social strata choices and behavior (S. R. Khan, 2010a, 2010b; Reardon, 2011). Very little is known, thus far about the dynamics of the upper class educational strategies.

The literature on IEO tends to assume that working class children actively reproduce their parents' social class (with their actions, resistance to dominant rules, and "bad behavior") and deduces that the lack of valuable resources (economic, cultural, and social) hampers the opportunities of working class children (Bernardi & Requena, 2010; Erikson & Jonsson, 1996; MacLeod, 2010). By contrasting the situation of the low social class with the upper social class, researchers tend to assume that the high educational achievement of the privileged social strata is due to the ownership of this capital. Thus, they assign a passive role in social reproduction to the upper social class families (Kaufman, 2005). However, if the privileged social strata do not invest the capital they own in valuable skills and abilities, they run the risk of downward social mobility (Kaufman, 2005; S. Khan & Jerolmack, 2013; S. R. Khan, 2010a, 2010b). In other words, capital per se does not entitle any benefit unless it is effectively translated into advantage. Investments and choices, rather than ownership, are what drives the performance of upper social class children.

Focusing exclusively on the comparative disadvantage that working class students undergo implies targeting only one side of the IEO puzzle. Although upper-class children keep outperforming their lower social class counterparts, privilege has its limitations and it is shaped by ascription to different social groups. Unless we tackle the analysis of upper-class educational opportunities by taking into account the heterogeneity among the most privileged, the IEO puzzle will remain incomplete.

1.3.2 Instruments of social reproduction

Inequalities of financial resources are, doubtless, one of the most clear and commonly acknowledged probable causes of the achievement gap between social classes. Parents with high levels of financial resources can invest much more money in their children's education than their poorer counterparts. The links through which money contributes to educational success are multiple and not only related to direct investments in educational goods such as books, private tutoring or enrollment in private schools, but they it also operate through better living conditions, such as high-quality nutrition, childcare, safe neighborhoods, etc. Still, there are things that money cannot buy.

The crucial divergence between working-class parents with high income levels and upper social class parents with similar financial resources is knowledge of the system. Parents from the upper social class have gone through further levels of education and, most importantly, have succeeded in them. They know how the system works, where to invest, and how to get into university. In sum, they have a map of the route through academic achievement. Yet, strategies must vary depending on the institutional and social framework. Simultaneously, they must adapt to their children's needs and talents.

Finally, parents from diverse social classes have diverse cultural capital. But, cultural capital does not have intrinsic value; its utility emerges only when it is used to gather social valued aptitudes and skills. In other words, when it is translated into status. Therefore, culture is not a reflection of inequality but works to produce it (S. R. Khan, 2010b). Parents from the upper social class, with high levels of education, have the kind of cultural capital that is valued and rewarded both by institutions - such as schools - and society. Their non-cognitive abilities make them seem better and brighter, which allows them to navigate the social structure with greater proficiency than their working class counterparts. Linked to cultural, human, and economic capital is social capital. The social networks of parents are linked to the social networks of their children, and the peer group is an important factor that must be taken into account in the early stages of life. Social connections provide individuals information and shape the expectations and aspirations of parents and children.

The work of Boudon (Boudon, 1973) offers one of the most comprehensive theories of why, despite the great educational expansion in recent decades, equality of educational opportunities has not yet been reached and, most importantly, why upper class children keep out-achieving the lower social classes. In his seminal work, Boudon distinguishes between the *primary* and *secondary* effects of social origin on educational performance. The former are understood as the effects of social origins (expressed as a function of cultural, economic, social, genetic, and psychological traits) on individuals' capability to achieve in school (M. Jackson, 2013). The latter, refers to the unequal educational choices made by children of different social class, which are conditional upon individuals' capacity to perform. The institutional framework, however, shapes the strengths of and ways in which primary and secondary effects work. On the one hand, the tracking system affects choices by establishing transition points while, on the other, the degrees of freedom left to parental intervention impact the extent to which social origins affect the capacity of children to achieve in school.

1.3.3 Educational expansion and its impact on choices

Education systems have expanded in the last few decades, bringing in children from the lower social strata. Equality of access together with improvements in the living conditions of the lower social classes was believed to provide equality of opportunities. However, universal education is intrinsically unequal (Shavit, Arum, Gamoran, & Menachem, 2007). This is because with the expansion of an education system, there also comes a requirement for differentiation in educational pathways (Blau, 1970), and secondary schools tend to sort children into different tracks according to their demonstrated ability. The need to differentiate has its origin in the value of credentials in the labor market (Bernardi & Ballarino, 2012; Shavit et al., 2007). As the proportion of the population with credentials grows, the informative value[8] of the qualification declines for employers, as a credential inflation is produced. At the same time, the education systems have different levels for the standardization of educational provision[9] and tracking procedures (Allmendinger, 1989). Highly stratified tracking systems, such as in Germany, may help to maintain the value of credentials as fewer students obtain them (Allmendinger, 1989). In contrast, education systems such as those in the US and Korea - where children are sorted at later stages and to a lesser extent - may produce a high credential inflation because a higher proportion of the population holds them.[10]

As different paths entail different costs and rewards, individuals make plans about which track to follow based on a rational calculation, weighting the costs and benefits of different educational options - a calculation that is strongly influenced by social class (Breen & Goldthorpe, 1997; Ellwood, Kane, et al., 2000; Erikson, 2007). The different choices made on account of this rational calculation is what Boudon (1974) has called the *secondary effects* of social origins in education. The underlying reasoning is the following. According to relative risk aversion theory, individuals are interested in class maintenance but, above all, they aim to avoid social demotion. In order to succeed in this primary goal, individuals must achieve different levels of education depending on their position in the social hierarchy. As a way of illustration, a working class child does not need to go to university to achieve his/her goal; in contrast, the offspring of professionals must gain a higher education if they want to reach the class maintainance. In this manner, while the same mechanism applies between social classes - relative risk aversion - the consequences differ by social class. Briefly, the secondary effects of social origin are understood as the diverse choices made by individuals with different social origins regarding whether to continue in education - or not - although this is conditional on their performance.

Choices and strategies are not made in a vacuum, but are a response to at least two constrains: previous performance and institutional framework. This is to say, educational performance influences the strategies implemented by parents regarding their children's education since they must adapt them to their children's needs. Because parents from diverse social classes expect their children to achieve and perform at different levels in education, these educational choices will be

[8] Educational credentials are a "signal" of the skills and knowledge acquired. Thus, if the proportion of population that holds those credentials increases, employers are not able to gauge the quality of the employee by resorting exclusively to this credential. Consequently, other skills and abilities should be taken into account as a complementary signal of the quality of the employee.

[9] Understood as the degree to which the quality of education has the same standards nationwide.

[10] In this kind of societies and labor markets, in order to reproduce a privileged social position children may need to invest in postgraduate studies. In addition, non-cognitive abilities such as charisma may have a high impact on employability because employers might be more sensitive to personality traits when the informative value of credentials is low.

biased by social background. Simultaneously, these choices and strategies are influenced by the institutional framework in which they must be displayed. Therefore, when analyzing the effects of social origins on education we must take into account the dynamic nature of choices and strategies within the institutional framework boundaries.

Nonetheless, some scholars have analyzed upper social strata strategies and have elaborated some theories. Raftery and Hout with their theory of **Maximally Maintained Inequality** (MMI), claim that the high social strata allow the enrollment of lower social classes into an educational stage only when all of their own offspring have reached the point of saturation in the educational level under consideration (Raftery, Hout, et al., 1993). For example, only when all the offspring of the upper social strata have successfully enrolled for secondary education do they permit the enrollment of lower social classes in this educational stage. As the overall credentials of the population have increased, upper social strata children have begun to differentiate themselves in both terms of quantity as well as quality. Hence, while initially the inequalities lay in the opportunities for attainment, they proceeded to focus on the odds of placement in more selective tracks. In this sense, the **Effectively Maintained Inequality** (EMI) theory claims that when a level of education is close to becoming universal, the privileged social strata differentiate themselves in terms of quality[11] (Lucas, 2001). Despite the great contribution made by both theories, unraveling how the upper social strata apply pressures and collaborate to maintain their initial advantage, neither disentangles what is done at the individual level. In addition, the upper social class is a heterogeneous group, and choices and behavior might vary within the upper social class depending, for example, on ethnicity, gender, previous performance, or the immigrant status of the children. Furthermore, strategies are not as static as depicted by the aforementioned theories: rather, they are dynamic and need to adapt to children's needs and talents.

Following the work of Blossfeld (H.-P. Blossfeld & Prein, 1998) the fourth chapter of the dissertation approaches the analysis of educational micro-processes from a dynamic rational choice perspective. This is to say, choices and behavior are triggered by past events - such as academic performance - and adapt to the specific institutional and social framework in which they must be displayed. More precisely, with the aim of explaining the choices and behavior of parents and children in the South Korean context, a dynamic binary response model based on game theory is conducted.

1.3.3.1 Tracking brightness or social class?

The case study selection seeks to provide with sufficient variation in order to unravel how upper-class educational opportunities are shaped by the socioeconomic and institutional framework boundaries. The three systems differ regarding the tracking procedures, freedom of school choice, and curricula standardization. Therefore, the strategies to "effectively maintain" advantage must be different.

Firstly, the clearest difference between the education systems under study is the tracking procedure. Germany has traditionally been considered a highly stratified system, with a rigid selection into academic or vocational tracks around the age of 10, depending on the Federal State. Yet, the system has changed and is becoming much more permeable. The early tracking placement

[11] For example, enrolling in the most advanced courses or selective universities.

is not definitive and children can transfer from one path to another - still, they have to comply with some requirements. This higher permeability may be an advantage for upper social class students, who would be able to recover from initial academic failure. In this vein, children from privileged backgrounds need to achieve a certain level of education to successfully reproduce their privileged position. It is for this reason that they are the most compelled to re-enter in academic paths and gain a tertiary degree. Furthermore, they have more resources in order to compensate and overcome an initial failure. In contrast, the US has traditionally been considered as having comprehensive system with low levels of tracking. However, although the formal tracking starts later than in Germany - around age 16 - there is much room in which to customize the educational curricula from 9th grade on, which de facto implies the segregation of children according to ability at age 14. In this regard, at 9th grade students can select the subjects in which they enroll and their academic standards. Advanced Placement (AP) courses are especially valued by highly selective universities, particularly in subjects such as mathematics, science, and English. Hence, although children are formally in the same track they are informally segregated according to ability. Korea contrasts with both Germany and the US. On the one hand, the formal tracking starts at age 16 - like in the US - and the curriculum is much the same nationwide for all pupils until that point (there is no room for customization, unlike in the US). After the age of 16, children are sorted into academic or vocational paths, yet the vast majority selects the former. In this manner, the system does not sort students, but students select the track in which they want to enroll - unlike in Germany, where educational authority recommendations have a strong impact on the final decision.

The expansion of the education systems did not impact only the value of the credentials but also the rules that regulate the system. The degree of permeability to parents' requirements and children's needs is linked to the mechanisms of social reproduction through education. With regard to the case studies, in Korea - where differentiation is scarce - parents have found a way to overcome the High School Equalization Policy: private after-school tutoring, ultimately creating a shadow education system. This is because parents from the upper-class attempt to translate their privileged capital into an effective advantage. If the formal system does not facilitate this then they will turn to the after-school system to guarantee success in education. At the other extreme we have the US, where the system ensures and promotes the customization of education within the formal system, creating one of the most unequal systems in the OECD. In the middle, we have Germany, whose education system can reproduce social hierarchy: vocational studies for the working class, tertiary education for the upper class. Thus, "too much equalization" appears to push parents to look for differentiation outside the system, but "too much freedom of choice" results in inequalities within formal education. Yet, early tracking procedures would help to justify and perpetuate educational inequalities.

1.3.4 Unequal responses, unequal chances

One of the most enlightening results of Lareau's seminal work is that performance triggers different parental responses by social class (Lareau, 2000, 2011). In this regard, upper-class parents seem to engage the most in their children's education when their offspring have difficulties in school. By contrast, educational success prompts parental engagement in the working class case. These

results are consistent with rational choice and relative risk aversion mechanisms. This is to say, low performance triggers upper class parental responses because it threatens class maintenance while, in contrast, success heightens working-class parental investments because it increases the opportunities for social promotion. The rational choice for parents, hence, is to invest either if their children have the cognitive abilities to succeed or parents have the means to afford the "ransom" to rescue their failing offspring.

Lareau's findings have been supported by a growing body of research suggesting that upper class parents provide their offspring with a safety net that prevents them from failing too hard (Bernardi, 2012; Bernardi & Boado, 2013; Bernardi & Grätz, 2015). These findings have been termed as the "compensatory effect" of social class and follow the rational choice approach. Still, the compensatory effects literature tends to focus on the "safety net" that upper class provide and often neglects the analysis of disadvantaged yet successful individuals. In order to better understand the mechanisms driving parental responses, the latter group has also been included in the analysis of chapter 4. In this manner, my theoretical approach is close to rational choice theory and, more precisely, to a relative risk aversion mechanism. In short, parents attempt to maximize the chances of class maintenance - or social promotion - for their offspring, and activate the capital they have at their disposal to help their children. These mechanisms would explain why parents of the upper class over-engage when their children have difficulties (to ensure class maintenance), but also why success leads to a higher educational involvement in the working class case (due to the opportunity for social promotion resulting from lower levels of uncertainty regarding their children' educational capabilities).

At the same time, very little is known about the dynamics leading to parental investments and choices. Academic performance is not always stable, one child may perform at a high level and then lower his/her grades and vice versa. Yet, how do parents react to these dynamic performances? Do parents from different social classes react differently? Do they adapt their choices and educational strategies to their children's performance? Chapter 4 of this dissertation aims to shed light on the dynamic choices of parents, and how parental educational strategies adjust to past performance. At the same time, it tackles the different uses that parents make of private after-school education in Korea, and how these uses may lead to diverse opportunities in education.

1.3.5 Multiplying or fading privilege?

The upper class is not homogeneous group. Yet, previous research has tended to analyze it as such, thus neglecting an analysis of how social class advantage is molded by the ascription to other sociocultural groups. As a way of illustration, in the US there are two main sources of privilege: ethnicity and social class. The advantages associated with being upper class could, hence, differ between historically privileged ethnicities (Asians and whites) and historically discriminated ethnic groups (Hispanics and blacks). As a matter of fact, the achievement gap between ethnicities is much lower among poor students than among rich pupils (Reardon, Baker, & Klasik, 2012). This might be because, whereas the gap among poor children is "fed" by one source of privilege (ethnicity), the gap among upper-class children is "fed" by two sources of privilege: ethnicity and class. This is to say, black and Hispanic poor students would suffer the "double trouble" of being poor and from an underprivileged ethnic group. By contrast, white and Asian poor students would

be affected by just one source of disadvantage: their social class. The performance of the latter would, hence, be higher because they enjoy the benefits of a privileged ethnicity. On the opposite side of the social hierarchy, the upper-class children from white and Asian backgrounds would add two sources of privilege - class and ethnicity - while in the case of their black and Hispanic counterparts the benefits of being upper class would diminish as they come into collision with their underprivileged ethnicity. This argument, however, does not uphold the position that there is intentional discrimination on the part of educational officials or institutions; instead, it reflects the historical processes of discrimination that have formed the social structure of the black and Hispanic communities in the US. In other words, the configuration of the black and Hispanic middle and upper classes was conditioned by systemic prejudice and racism, which limited their opportunities, and the consequences of which can still be traced up to until today.

The argument so far presented is further explained and empirically tested in chapter 3 of the dissertation, where the upper class is analyzed as a heterogeneous group. More specifically, the chapter examines the academic performance of upper-class children from four different ethnic groups: Asians, blacks, Hispanics and whites. In so doing, the chapter aims to shed light on the four shades of social class advantage.

1.3.6 Stereotype susceptibility and the gendered privilege

While the roots of ethnic privilege in the US are fairly clear, other sources of privilege are not so obvious. Gender, for example, entitles privilege and this was clearly not meant for women. Fortunately, changes in social attitudes have shifted the meaning and effects that gender have on children's education. Nonetheless, gender stereotypes continue to limit the opportunities of boys and girls.

Assessment after assessment, the Programme for International Student Assessment (PISA) (OECD, 2012a, 2015) data has found that boys outperform girls in mathematics, while girls outperform boys in reading, and no significant differences are found in science. These unequal achievements have prompted gender stereotypes regarding the innate capacity of children to perform in different domains on account of their gender. The belief that girls are better in languages and the humanities is widespread, as is the belief that boys are better in mathematics and science subjects. These widespread beliefs may affect the capacity of children to perform in different school subjects as a result of gender identities.

Stereotypes affect the self-perception of children and influence their capacity to perform in specific domains (Ambady et al., 2001; Shih et al., 2002, 1999; Spencer et al., 1999; Steele & Aronson, 1995). This is because individuals are subject to different social identities and, because diverse social identities are linked to different clichés, individuals may be susceptible to diverse, and even contradictory, stereotypes. For example, an Asian, female, doctor may be singled out as an Asian, as a female or as a doctor. The different identities will be activated in diverse situations which affect the behavior and self-conception of the individuals. As a matter of fact, a number of studies have pointed out that subliminally priming clichés prompt individuals to behave in a stereotype-consistent manner. Hence, the performance in a domain can be either boosted or hindered when a positive or negative stereotype is activated. The logic behind this behavior is the following. A negative/positive stereotype is activated in a non-conscious way - by simply asking a

person what their ethnicity is, or asking about gender issues - before the test. The individual will position him/herself on either the positive or negative side of the stereotype, therefore, activating self-confirming mental depictions for poor or good performance in the domain under analysis. For example, there is a widespread belief that boys and girls have innately different abilities in mathematics and language. These beliefs will affect the capacity of both in different domains, perking up or hindering their performance depending on whether they are part of the positive or negative stereotyped gender.

Chapter 5 of the dissertation focuses on how stereotypes can boost or hinder children's performance in two domains subject to gender stereotyping (German as a female domain and mathematics as a male field) in Germany. The theory presented and empirically tested upholds that to the perks of being from the positive stereotyped gender, some children can add the benefits of being from the upper class. Other children, by contrast, will undergo the "double trouble" of being from a lower social class and a negative stereotyped gender. Finally, some children will enjoy just one source of advantage - either class or gender - setting a middle point between those whose performance is perked up or hindered by two sources of (dis)advantage.

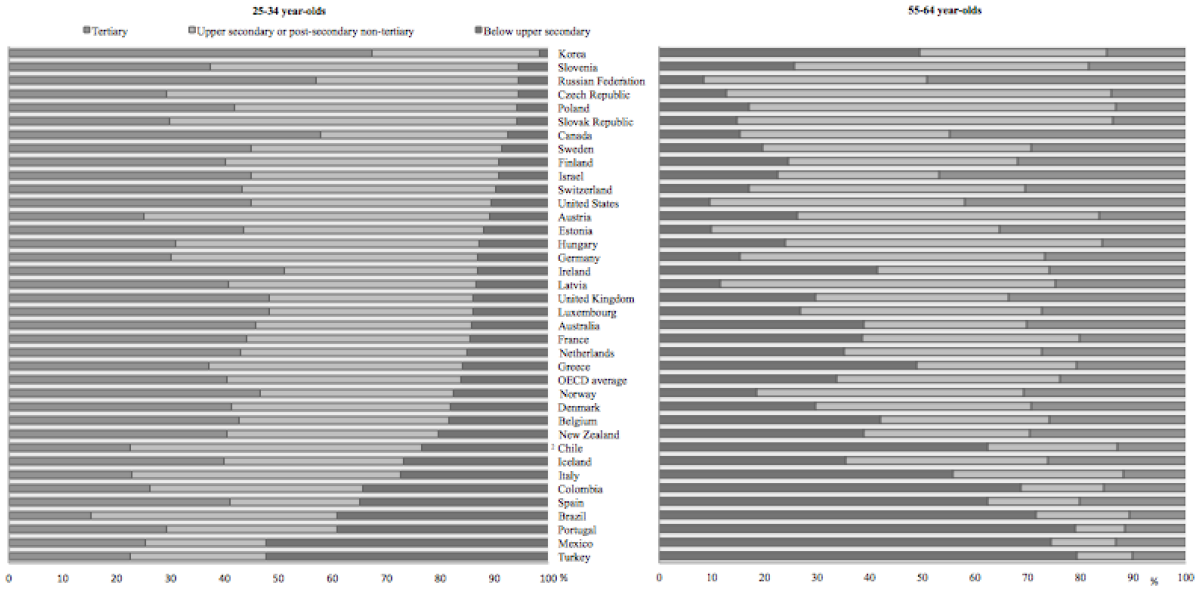
1.4 Educational Expansion in the US, Korea, and Germany

1.4.1 The Big Bang

Korea has experienced an impressive educational expansion and in just 30 years the share of the population with tertiary degrees has increased enormously. Germany and the US did experience an earlier expansion, yet it was not as dramatic as in the Korean case. Figure 1.1 displays the proportion of the population that holds a particular educational credential by age group. If we focus our attention on the Korean case, we can see that 67% of its young adult population (between 25 and 34 years) and 15% of its older population (between 55-64 years) holds a tertiary degree, which means a 52% gap between cohorts. In fact, only 2% of its population between 25 and 34 years holds a credential below upper secondary education, a proportion that rises to 49% among 55-64 year old. We can infer, therefore, that the educational expansion did not only benefit the upper social classes but a large share of the population too.

Although a large proportion of the US population holds a tertiary degree (45% of its population between 25-34 years and 42% of the 55-64 year olds) its educational expansion has been much less dramatic than in Korea and its generational gap is just of 3%. The situation is quite similar for upper secondary graduates, among whom the gap is even lower: about 1%. Overall, both the US and Korea have fairly highly-educated populations, although the expansion of their systems has followed different routes at diverse speeds.

Finally, Germany has slightly improved the level of education among its population and the system appears to be stable rather than expanding. It is the country with the highest share of the population holding an upper secondary degree, probably due to its high quality vocational training and the labor market value of such a credential. The high quality of vocational training seems to prevent mass tertiary education, and around 30% of its population holds a higher education diploma. At the same time, the prevention of mass tertiary education may protect the German tertiary degrees from credential inflation, since fewer individuals hold one, maintaining its value



Note: Data for Japan are not displayed because disaggregation between below upper secondary education and upper secondary or post-secondary non-tertiary level is not available.
1. Year of reference 2012.
2. Year of reference 2011.
Countries are ranked in ascending order of the proportion of 25-34 year-olds with attainment below upper secondary education.

Figure 1.1: Educational attainment among younger and older adults (2013). Source: OECD. Table 1.4. (www.oecd.org/edu.eag.htm).

as a positional good.

1.4.2 Social stratification through education

The educational expansion of Korea occurred significantly before the upper social class reached the point of saturation. As figure 1.2 displays, Korea is the system with a higher proportion of youngsters experiencing upward educational mobility: 58% have reached a higher educational level than their parents, while just 5% have experienced downward educational mobility. Yet, status quo is also substantial and affects 37% of the population. In contrast, the US and German systems appear to be more prone to the status quo and occupy the lowest levels of upward educational mobility in the OECD. In this regard, only 24% of German youngsters have a higher level of education than their parents, while 16% experience downward educational mobility. The status quo, then, seems to be the norm in Germany where 58% of the population inherit their parents' fate. The situation in the US is slightly better and 30% of its youth experience upward educational mobility; however, 18% have lower levels of education than their parents. More than half of the young population (53% of youngsters) of the US reach their parents' educational level and maintain the status quo.

The data displayed in figure 1.2 suggest that the dramatic educational expansion in Korea has been accompained by rather fair opportunities for most of its population. The system appears to provide with opportunities not only to its privileged population but to the whole country. However, it is also true that since most parents were low educated, upward educational mobility is more likely than in other countries where parents have already met high educational standards. Still, the US and Germany occupy a low position in the ranking not only in comparison with Korea but with other countries with similar characteristics. Therefore, we could infer that status quo

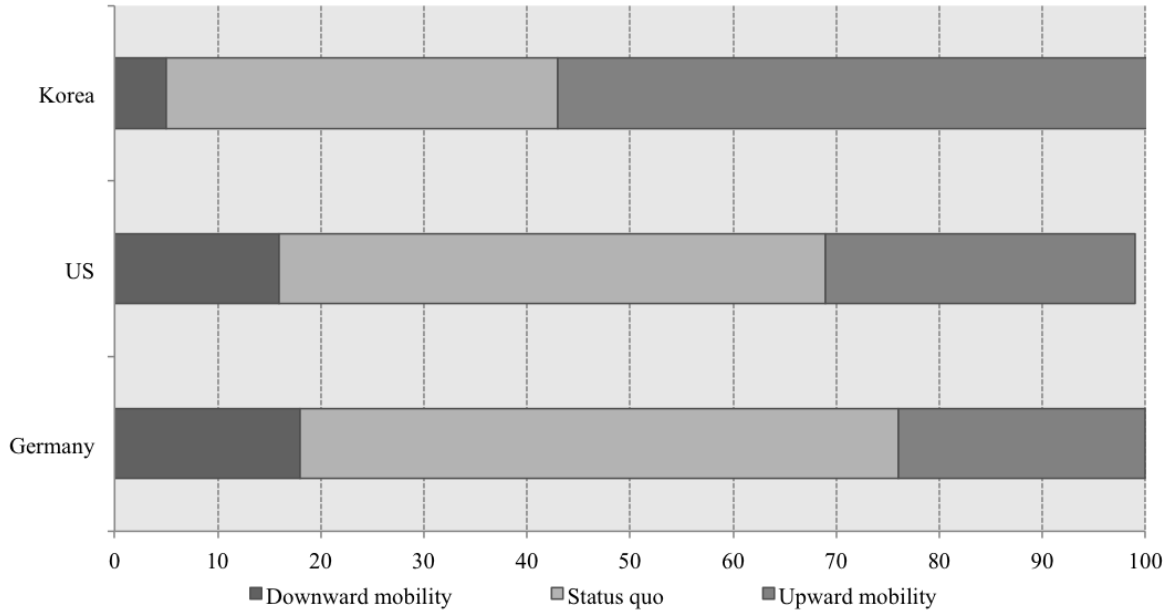


Figure 1.2: Absolute educational mobility (2012). Percentage of non-students aged 25-64 whose educational attainment is higher than (upward mobility), lower than (downward mobility) or the same as (status quo) that of their parents. Source: Own elaboration using OECD data from Table A4.4. Annex 3 (www.oecd.org/edu/eag.htm).

maintenance might be a consequence of their system and society rather than of the "timing" of their expansion.

1.4.3 The quality of the system

One might imagine that the rapid expansion of education in Korea may lead to a low quality of education, due to the difficulties in providing with good teachers and schools in such a short period. Yet, Korea has one of the most successful systems in the OECD. In assessment after assessment, the OECD situates Korea as one of the top educational performers. Indeed, its overall scores in PISA are among the highest in every assessed domain: reading, mathematics, sciences, and problem solving skills (OECD, 2012a, 2012b; Viktória & Eunah, 2012).

In trying to explain and make sense of the Korean results, equity, and expansion, some scholars have pointed to its widespread private tutoring system ("shadow education") as the root of the country's educational performance. Yet, if this was true, then IEO should also be affected by participation in private tutoring. In other words, if private tutoring was so effective as to increase the average PISA score for the whole country, then it should also affect the gap between social classes due to their unequal participation patterns. Yet, this does not appear to be the case. Other skeptics of Korea's success argue that its mass education system focuses on memorizing and, therefore, hampers creativity. But, Korean pupils are also among the top performers in problem-solving skills (OECD, 2012b). Others point out that its comprehensive educational system hinders its top achievers, since they are "condemned" to share curricula and classes with low performers. Yet, top performers are more present in Korea than in the US or Germany (figure 1.3), where the system allows for differentiation. Moreover, not only do top achievers benefit from the system, but

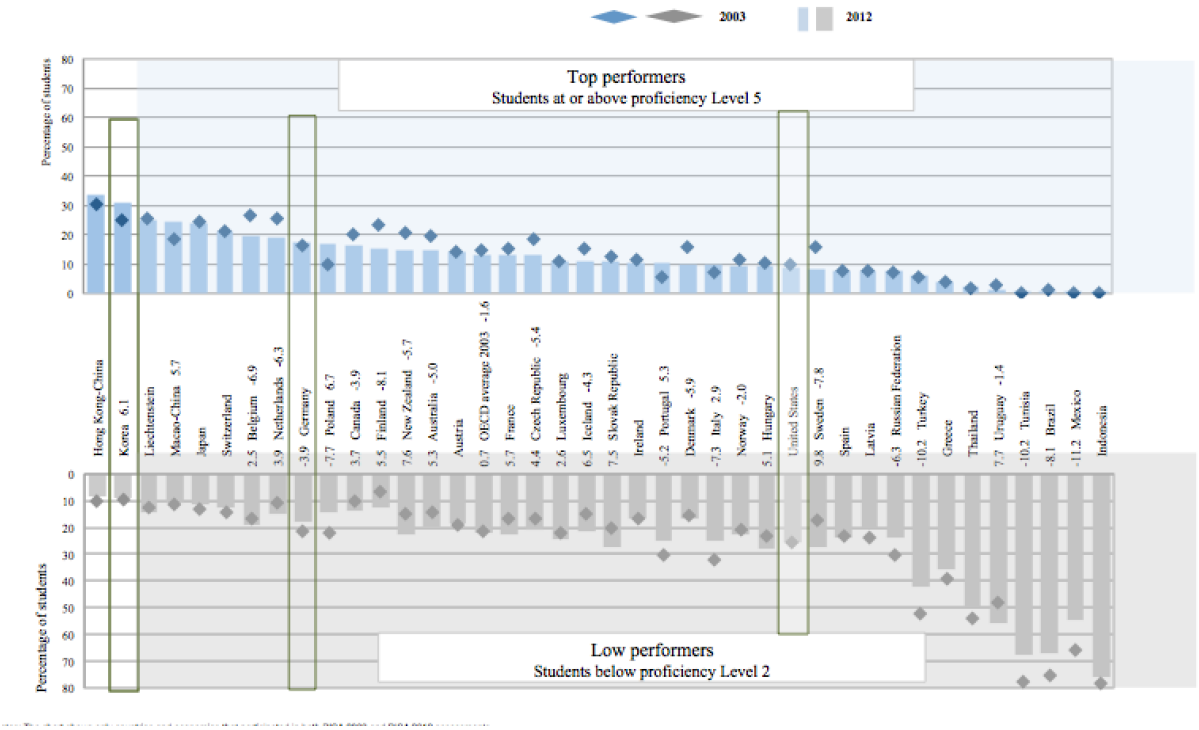


Figure 1.3: Percentage of top performers and low performers in mathematics, PISA 2003 and 2012. Source: OECD, Tables A9.1a, A9.1b and A9.1c.

there are fewer low performers in Korea than in the US or Germany. In fact, Korea has improved its share of top scorers since 2003: an increase of 6% on the share of students performing above the 5th level of PISA and, at the same time, it has maintained a quite low share of bottom achievers (around 9%). Neither the US nor Germany have improved their share of top performers as Korea has done. In fact, the US has maintained its high share of bottom performers (more than one fourth (26%)) and slightly decreased their top performers (from 10 to 9%). Germany has improved its share of low performers with a decrease of almost 4 percentage points, which is still almost double the Korean share. At the same time, Germany has slightly increased its top performers, although, it is still far from Korea.

Briefly, the expansion of the Korean education system in the last 30 years appears to have been accompanied by equity in the system and quality of education, without a high level of tracking. Its shadow education might help to foster student achievement, yet there is no consistent evidence of the role that private tutoring has in children's achievement (Á. Choi et al., 2011; H.-J. Park & Lee, 2005). In contrast, the educational expansion of Germany and the US has followed a different logic, resulting in a rather status quo situation. At the same time, it does not seem to help either top achievers or low performers. But, holding a high educational degree does not necessarily translate into a full-time job.

1.4.4 The returns of education in the labor market

As the proportion of the population with a specific credential increases, the value of such credentials decreases. Therefore, higher education credentials must have diverse value in the three countries under study, Korea being the country where it should have the least value, followed by the US

and, finally, Germany. Moreover, other variables could affect the conversion of high educational credentials into a full-time and full-year paid job. In this regard, gender is a crucial variable that marks the patterns of employment for individuals.

So far, we have seen that Korea outperforms the US, Germany, and most of the OECD countries in the following aspects: expansion, equity, performance and attainment in education. Yet, when it comes to gender equality, Korea still has a long way to go. In the Asian country, young women lag significantly behind their male counterparts in labor market returns of education. As figure 1.4 displays, while only 46% of tertiary-educated females are full-time and full-year earners, over 70% of males are. This constitutes a 24% gender gap. At the same time, the dramatic expansion of the education system appears to be accompanied by a widening gender gap. Hence, whereas the gender gap in the older cohort is quite low (12%), it more than doubles in the case of the younger cohort (25%). Following the same trend, the gender gap in the US seems to have increased regarding full-time and full-year tertiary educated earners, although this trend is much more moderated than in the Korean case. In the American case, the gender gap for the older cohort was around 10% and it increased to 17% in the younger cohort. If we turn our attention to the gap within genders, the situation has slightly improved for both, but much more for men (8%) than for women (2%). Nowadays, 87% of tertiary-educated men in the US are full-time and full-year earners, while 70% of women are (17% and 14% more than in Korea, respectively). Finally, the gender gap in Germany has increased, but to a lesser extent than in Korea and the US. While for the older cohorts the gap was around 28% it has increased to 37% in the younger cohorts - a 9% growth. Germany is also the only case study in which a lower proportion of the cohort of young tertiary-educated women are full-time and full-year earners than in the older cohort (50% of the former and 60% of the latter). Thus, the gender gap is not only the widest and increasing, but the share of female full-time and full-year earners has diminished over their cohorts. At the same time, young males have not improved - yet not worsened - their share of full-time and full-year earners with regard to older cohorts.

In sum, tertiary education seems to convey different rewards for men and women while, in addition, the gender gap is quite different among the countries under analysis. Firstly, while the gap in older working cohorts appears to be moderated in Korea and the US, it is quite high in Germany. Secondly, if we look at the situation for the younger cohorts, we can see that the circumstances are actually worsening, and tertiary-educated young women lag far behind their male counterparts as full-time and full-year earners. Thirdly, the German case, with the highest gender gap and a diminishing share of women in full-time full-year jobs, is the most dramatic among the three. Finally, it is important not to lose sight of the fact that the data refers to tertiary-educated women, who thus have a potential professional job market. Hence, tertiary education appears to payoff much more for men than for women.

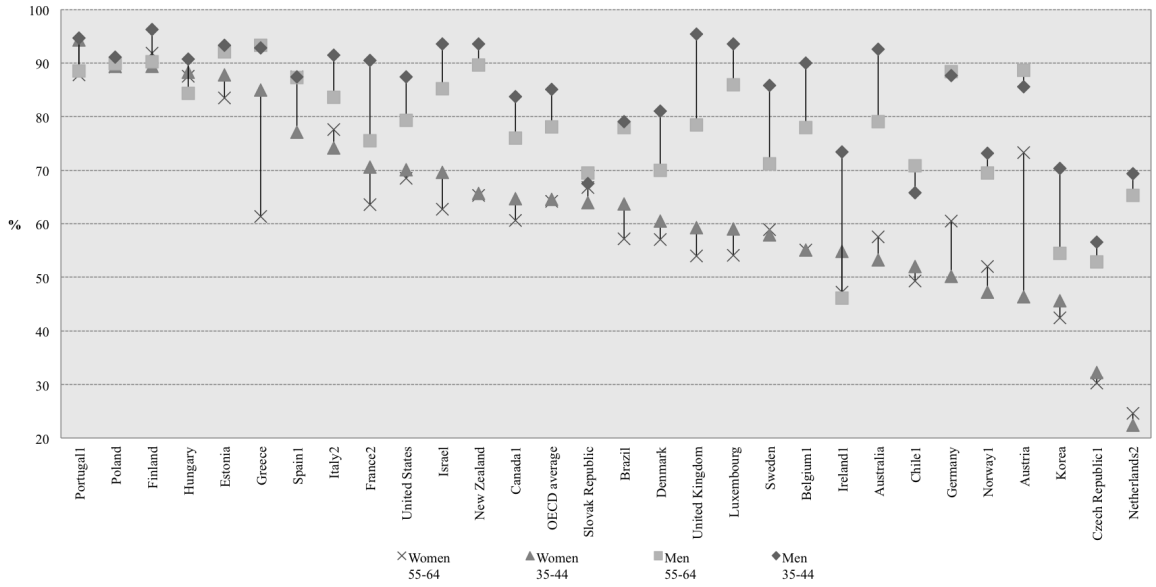


Figure 1.4: Tertiary-educated workers, by gender and age group (2012). Percentage of full-time, full-year earners. Source: OECD. Table A5.6. (www.oecd.org/edu/eag.htm).

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CHAPTER 2

CASE STUDIES

This chapter presents an overview of the socioeconomic framework as well as a brief analysis of the educational achievement gap of the countries under analysis: the Republic of Korea (Korea), the Federal Republic of Germany (Germany) and the United States of America (US). At the same time, it presents the most central features that will be taken into account in the following analysis.

2.1 The Republic of Korea

2.1.1 Justification

One of the most frequently asked questions when I present the case study selection is: why the Republic of Korea? First of all, South Korea has recently experimented a dramatic educational expansion, bringing in children from the lower social classes. This expansion has been accompanied by policies aiming to reinforce the principle of the equality of opportunity in education for all, such as the High School Equalization Policy (HSEP). Following a lottery system, the HSEP randomly allocates children to a school within their district, and even private schools are subject to this process. At the same time, the curriculum meets the same standards nationwide and tracking by ability starts only at high school. This highly comprehensive system sets strong challenges to parental intervention, limiting the ways in which privilege can be effectively translated into educational advantage. As a response to the standardized formal education, Korean parents have turned to the parallel system that has emerged in the shadow of the comprehensive Korean education: private after-school education.

Whereas in the formal system parents cannot chose either their offspring's school or their curriculum, they do have freedom of choice in the after-school system. Korean crammer schools (*hagwons*) prepare children to pass standardized tests and enrich their knowledge in specific subjects. Although the effect of this shadow education is still the subject of debate and broad research (Á. Choi et al., 2011; A. Choi et al., 2010; J.-K. Lee, 2006; H.-J. Park & Lee, 2005), parents truly believe that shadow education boosts their children's performance. Besides, in a country

Figure 2.1: GDP Growth of the Republic of Korea, 1900-2012. *Source: Own Elaboration using World Bank data*

where over 60% of the young population holds a tertiary degree, any small gain in the chances to reach the SKY[1] is welcome.

2.1.2 The socioeconomic framework

The Republic of Korea is a young country born during the Cold War. Although the initial aim was to maintain Korea as an unified state, the escalating tensions between the Soviet Union and the US caused the division of the country in two separated states: North Korea and the Republic of Korea (South Korea). In 1948, the Republic of Korea established its independence and its capitalist economic development began.

The initial economic expansion fostered social mobility. The government and managerial positions under Japanese control were now available for Koreans. The economic growth and the new possibilities in the newborn country made citizens believe that meritocracy was a reality and that, if you work hard, social promotion is possible. Economic growth was accompanied by high equity in income distribution, which contributed to the social cohesion in the country and encouraged expectations of meritocracy. South Korea seemed to be a land of opportunities.

As figure 2.1 displays, the continuous Korean economic growth suffered a setback during the Asian economic crisis of 1997, a year in which the GDP marked its first negative value since the 1960s (-6.8%). However, the Republic of Korea overcame the crisis quite fast and in 1999 its GDP grew 9.5%, positive growth that the country has kept even after the economic recession of 2007. Yet, the way back to economic growth was no longer accompanied by equity in income distribution. The GINI coefficient slightly increased, while the relative poverty rate and the income gap rose during the last decade (Byun & Kim, 2010). These trends suggest that the benefits of the growing

[1]Korea's top three universities are Seoul National University (public) and Korean and Yonsey Universities (private). The wordplay SKY refers to its initials, and at the same time to its high position on the prestige hierarchy (Á. Choi et al., 2011).

Korean economy are concentrated in fewer hands (Byun & Kim, 2010), which has meaningful effects on the study of Inequalities of Educational Opportunities (IEO).

The causes of this rising inequality may have their origins in the shift from an agricultural economy to a technological industry (Viktória & Eunah, 2012). This economic shift has been accompanied hand-in-hand by a change in the value of educational credentials. More accurately, low educational credentials offer less benefits than they used to; however, high credentials do not necessary translate into a high profile job. This is because most of the young Korean population holds a tertiary degree, which produces a credential inflation. Nevertheless, Koreans are aware of the importance that education has for social mobility and families therefore spend a large share of their household income on education (Jones, 2013).

2.1.3 The institutional framework

2.1.3.1 From the bottom to the top

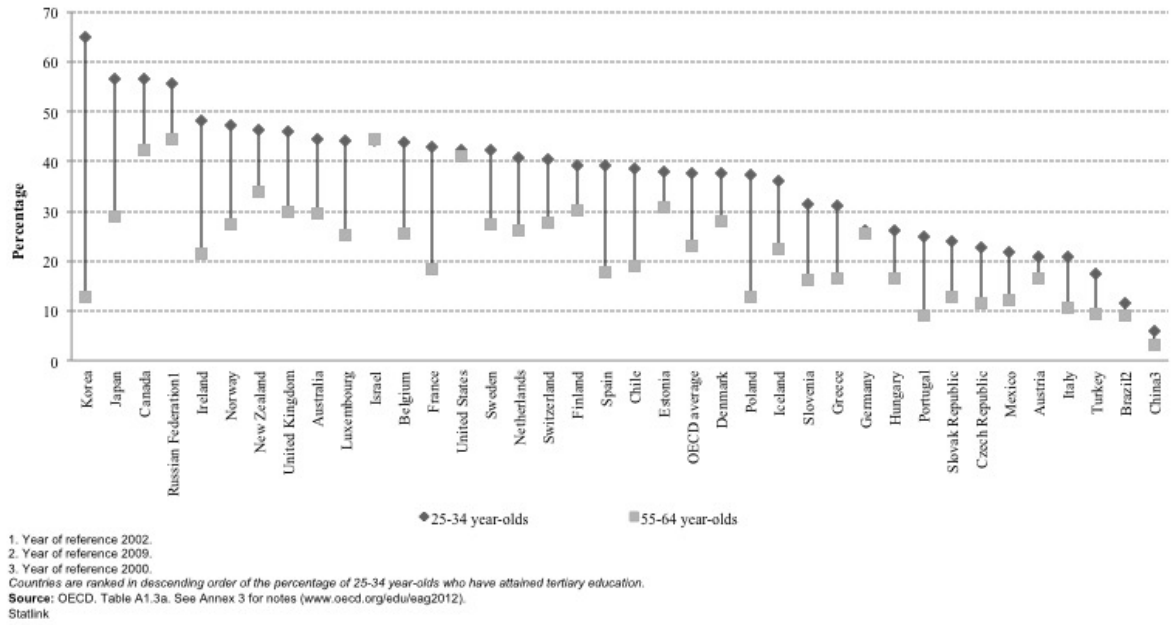
In 1945 the literaciy rate in the Republic of Korea was 22% and less than 20% of children were enrolled in secondary school (Jones, 2013). Its educational expansion has been impressive and in 1964 enrollment in primary school was already at 90%. It took longer to reach the same share of enrollment in middle (1979) and high school (1993) (Jones, 2013). In the initial stages of the expansion, educational institutions were few and competition to get into one of the most prestigious schools was fierce. Parents relied on private *hagwons* to prepare their children for the entrance examinations, which hampered the equity of the system. The most prestigious schools imposed high entrance standards that only few children were able to achieve. In 1969, the *Untested Middle School Assignment* policy was implemented and the entrance exams were moved from middle to high school entrance. The implementation of the HSEP put an end to this exam in 1974 and nowadays the competitive entrance tests take place at tertiary level, with a multiple choice centralized national exam, the College Scholastic Aptitude Test (CSAT).

The dramatic expansion of the system becomes clear if we take a look at the educational gap between generations. As chart 2.2 shows, while 13% of the population from the ages of 55 to 64 are tertiary educated, the share of Koreans from the ages of 25 to 34 holding higher education credentials increases to 65%. If we compare Korea with the rest of OECD countries, the improvement is even more outstanding: it moves from the bottom to the top of educational completion. But this impressive improvement has its consequences. In a country with about 65% of its youngest cohort holds a tertiary degree, and a very comprehensive primary and secondary stages of education, the necessity for differentiation to stand out in the labor market is even higher. The educational fever that South Korean society suffers from has its roots in the system and its nature.

2.1.4 The formal education system

The formal education system consists of six years of elementary education, three years of middle school, and three years of academic or vocational high school.[2] After those twelve years, students may choose to continue their studies at university or college, depending on their high school

[2]A figure with the structure of the educational system is available in the Appendix A.



1. Year of reference 2002.
2. Year of reference 2009.
3. Year of reference 2000.
Countries are ranked in descending order of the percentage of 25-34 year-olds who have attained tertiary education.
Source: OECD. Table A1.3a. See Annex 3 for notes (www.oecd.org/edu/eag2012).
Statlink

Figure 2.2: Population that has attained tertiary education (2010). Percentage, by age group.

track. Korean tertiary education is quite stratified and there is a small group of highly prestigious universities (the so-called SKY group (Á. Choi et al., 2011)), admission to which is very hard . Attending one of these universities offers a different set of rewards in the labor market, such as higher salaries and better working conditions (S. Lee & Brinton, 1996). Besides universities, there are also junior colleges that constitute the lower-tier institutions of tertiary education.

There is a high degree of standardization of the curriculum nationwide (Jones & Urasawa, 2012; H. Park, 2002). This means that educational institutions have little autonomy in curriculum development, and the central government is responsible of establishing the guidelines, teacher training, and school budgets (H. Park, 2002, 2007). In addition, grade retention due to bad performance is quite exceptional (Byun & Kim, 2010). We can infer, hence, that South Korean primary and secondary education are quite comprehensive in their organization (there is no tracking at middle school), which contrasts with the great stratification at the post-compulsory stages.

2.1.4.1 Pre-primary education

There are different types of pre-primary education that differ in terms of quality and opening hours. The most prestigious pre-primary institutions are kindergartens and a type of early education *hagwons*. Both focus on academic subjects, especially foreign languages and mathematics (Jones & Urasawa, 2012). Middle- and upper-income families are the ones that can afford the tuition fees of these institutions. These early *hagwons* develop a customize a program for each child, attending to their specific learning needs (Jones & Urasawa, 2012).

Families from less advantaged social classes tend to enroll their children in lower-quality childcare centers, as they cannot afford the tuition fees of early *hagwons*. As a consequence, children begin primary school at different levels, depending on the kind of childcare they had and their social background (Jones & Urasawa, 2012). Despite the comparatively low degree of

expansion of this educational stage, 42% of children under six were enrolled in some kind of childcare in 2009, most of them in private institutions.

2.1.4.2 Elementary and Secondary education

Primary school is tuition-free and compulsory, starting at age 6. The enrollment rate at this stage is almost 100% and once children are enrolled, retention due to a bad performance is rare (Byun & Kim, 2010). Thus, children pass to the next year even if their performance is unsatisfactory, which contributes to the poor perception that parents have of the exigencies and quality of formal education.

Secondary middle school is compulsory and partially free.[3]. It starts at the age 12 and lasts until the age of 15. Elementary school graduates are assigned at random to a middle school in their residential area. This process of random assignment includes both the public and private institutions of the district. Once children finish middle school, the tracking system starts and there are several high schools between which pupils can choose: general high schools, vocational high schools, science high schools, visual and performing arts high schools, and foreign language high schools.

Admission into high school is still subject to the HSEP procedure in most areas. Hence, middle school graduates are assigned at random to public or private high schools using a computerized program (Byun & Kim, 2010). If children live in a non-HSEP area, academic achievement might be taken into account and students may have to pass an entrance exam. Yet, most students are in HSEP zones, especially in urban areas and large cities such as Seoul and Busan. Here the tracking begins and, while academic high school programs prepare pupils for post-secondary education, vocational education and training prepare them for the labor market. However, there is an increasing share of vocational students who opt to continue to post-secondary education (H. Park, 2007).

2.1.4.3 Higher Education

Higher education has been reformed several times since the beginning of its expansion in 1960. It greatly expanded in the 1970s mostly due to labor market demands by investing in second-tier institutions such as junior colleges. In 1981, the government switched from admission to graduation quotas allowing a 30% excess of admission over graduation rates (this policy abandoned in 1987). With this change, the government aimed to increase the population enrolled in higher education, as well as competitiveness once inside the system (H. Park, 2007). Simultaneously, junior colleges received a setback and some were closed by the government, which was unsatisfied with the quality of the education provided, especially after the investments made during the previous decade (H. Park, 2007). Yet, in the early 1990's, the labor market increased its demand for middle-skilled and technological workers. The need for junior college graduates increased, which made the government raise its entrance quotas. Since then, the population with tertiary degrees has grown in South Korea, becoming one of the countries with the highest-educated population.

[3]"Partially" means that not all the students receive the full benefit of free education. Only those from rural areas and students under the Special Education Promotion Act do.

Since the 1990s tertiary education has escalated its diversification and specialization, however, it is still strongly regulated by the government, which controls important aspects of higher education such as teacher training, school budgets, and curricula (H. Park, 2007). It also establishes student quotas per year and administrates the College Scholastic Aptitude Test (CSAT). Recent reforms in education, however, move toward greater autonomy for universities in determining student quotas and pupil selection (H. Park, 2007). The strict control of tertiary education contrasts with the low public funding it enjoys. In South Korea the main institution funding tertiary education is the family, which is a huge burden on the household budget.

There is a range of five categories of higher education between which students who succeed in high school can choose: four-year colleges and universities that offer bachelor's degrees programs; teacher colleges; vocational junior colleges (two- or three- year education programs); polytechnics; and miscellaneous schools. South Korean tertiary education is highly hierarchical, with few prestigious universities (known as SKY universities (Á. Choi et al., 2011)) followed by second-tier and third-tier institutions. Junior colleges are less academically demanding than universities, and the CSAT score to be admitted is lower. In fact, the expansion of higher education has been done via the spread of junior college (H. Park, 2007). As a consequence, the number of second-tier and third-tier institutions increased, but prestigious universities are still difficult to reach. Attendance at one of the top universities is believed to guarantee a white-collar job in a top firm. To be admitted to one, students have to score among the highest in the CSAT. As a consequence, the exam becomes a once-in-life chance to attain a classification in the social structure. Research has shown that students from privileged social positions are more likely to attend highly selective universities and that attending these institutions has a positive impact on future income and job prospects (S. Lee & Brinton, 1996). In this regard, 17% of students from the upper-middle income classes attend upper-level universities; in contrast, only 6% of lower-class students do (Jones, 2013).

In sum, the expansion of the higher education system has been mainly due to an increase in second-tier institutions: junior colleges. In addition, there is a strong hierarchy among universities, with a few highly-selective and prestigious institutions. Although the government controls student quotas and administrates the CSAT, it does not support higher education with funding, which hampers equality of access due to the high tuition fees.

2.1.5 The system in the shadows

With the expansion of the education system the competition for a spot at the top of the social hierarchy became tougher. The prestige-oriented vision of education, together with the credentialism in the job market, has had an important impact on educational strategies. In Korea it is not enough to have high educational credentials, they must also be from a prestigious institution. The struggle to get into one of the top universities comes to a peak with the CSAT, when students have the chance to score high enough reach the SKY. In order to prepare for the CSAT, parents enroll their children in private after-school lessons, where they spend most of the time studying in order to improve their scores in the test (Jones, 2013).

But not all students have the same opportunities to attend private after-school education. Low-income families, for example, face a great challenge in order to enroll their children due to the high tuition fees. Still, 36% of them manage to pay the tuition and enroll their children. In contrast,

80% of the top-income families enroll their children in the shadow education system (Jones, 2013). Previous studies, however, have failed to provide consistent evidence about the impact that private tutoring has on children's performance. Whereas some studies suggest that it has a positive impact on achievement in mathematics (H.-J. Park & Lee, 2005), others report no significant effects (J.-T. Lee, Kim, & Yoon, 2004). Most pieces of research, however, do not properly address the issue of endogeneity effects. Hence, while talented children may boost parental expectations and investment in private tutoring, by contrast, parental investment and expectations may also foster children's performance. Chapter 4 of the dissertation aims to shed light on how past performance affects parental investment in education by social class, and how this investment affects the educational achievement of children at a later stage. The chapter takes a rational choice dynamic approach in order to disentangle the decision-making process that drives parental investment in private tutoring. It then analyzes how this investment influences the educational achievements of different types of pupils.

Despite the absence of empirical evidence supporting its effectiveness, Korean parents value shadow education even more than the formal education system. Private tutoring thus has a powerful role within the Korean society (Jones & Urasawa, 2012) and it constitutes a burden of approximately 11% of household income (Jones, 2013). All in all, enrollment in after-school lessons can be a source of inequalities but, in order to unravel how these inequalities are built, we cannot rely on cross-sectional data such as PISA. It is for this reason that the analysis conducted in chapter 4 relies on the Korean Youth Panel Survey (2003-2008).

2.2 The United States of America

2.2.1 Justification

The United States is known as the land of opportunity, yet, the reality is far from this ideal. There is no question that its society is highly stratified, and that IEO are larger now than they used to be (Reardon, 2011). In contrast with the rather cohesive Korea, the land of opportunity seems to be the paradise of privileged groups. Its education system allows the privileged to segregate themselves in a few schools, avoid the poor-achieving ones, and to buy the educational success with which they justify their privileged social position. In this regard, they have freedom of choice, and they use it to accumulate social advantage.

Nevertheless, the upper class is a heterogeneous group. Therefore, the advantages of being upper class can vary with membership of other social groups. More precisely, in the US ethnicity is an important source of privilege and disadvantages. Children from historically discriminated ethnicities - blacks and Hispanics - are still subject to the structural blemish of historical discrimination. Even today, residential ethnic segregation is salient, and the offspring of highly-educated blacks tend to share spaces with their lower social class counterparts, which in turn affects their educational opportunities. Hence, the US constitutes an exceptional case for disentangling the cumulative effects of privilege, not only through time but also through different sources.

2.2.2 Socioeconomic framework

The system of slavery has shaped the stratification process within the US society. From slavery to freedom, via segregation, either *de jure* or *de facto*, the history of African Americans is a history of discrimination. Forced to migrate as slaves, sold to landlords, exploited on the farms, and finally liberated but segregated, blacks have had to overcome endless hardships to achieve similar, yet not equal, living conditions to whites. But, African Americans have not been the only group segregated and discriminated against in the US history. The Jim Crow sanctions [4] also affected Latinos in Texas.

The ending of the Civil War (1861-65) revolutionized the social stratification processes by transforming around four million slaves into freedmen. These newly-freed citizens entered society with very little or no material resources and, despite the various Acts for redistribution of the land[5] (to which whites also were entitled), they had very limited real access to it. In the early 19th century, the situation of ethnic minorities did not improve much more, and both society and institutions actively discriminated and encouraged ethnic segregation. Discriminatory practices prevented ethnic underprivileged minorities such as blacks and Hispanics from taking advantage of government policies, while whites benefited from them (Pattillo-McCoy, 1999). As a way of illustration, the federal government stimulated the purchase of single-family detached houses from the 1930s to the 1960s through its taxation, transportation services, and housing policies. In doing so, it fostered the suburbanization process of the country. At the same time, the Home Owners Loan Corporation (HOLC) refinanced a large number of mortgages at risk of default or foreclosure, and introduced standardized assessments for the suitability of particular properties and communities for loans (both individual and group loans). These evaluations included the racial configuration or potential racial configuration of the area. Areas with a clear composition of ethnic minorities - or the composition of which was changing- were considered as undesirable and placed in the bottom category.[6] The HOLC assessments and categorization were used by the Federal Housing Authority (FHA) loan agents as the basis on which to make their decisions regarding loans. The FHA facilitated people to buy homes with small down payments and moderate interest rates due to its mortgages system. However, blacks could not take advantage of those loans due to three main reasons: bias towards single-family detached homes (in the suburbs); bias favoring new purchases rather than the repair of existing homes; and the redlining of black areas by the HOLC. Hence, while whites were fleeing to suburban America, blacks were confined to the old city centers. But, not only did the official loaning agencies discriminate against blacks and other ethnic minorities - private banks also appeared to be resistant to providing loans to blacks, regardless of their ability to pay. In the early 1990s a Federal Reserve of the US study suggested that discrimination accompanies blacks regardless of their salaries and areas of residence (Munnell, Tootell, Browne, & McEneaney, 1996).

[4] The Jim Crow sanctions were the statutes instituted by the Southern states and municipalities, beginning in 1880, that legalized segregation between ethnic groups.

[5] The Southern Homestead Act in 1866 provided the legal basis and mechanisms with which to promote black landownership. Yet, it did not disqualify former Confederate supporters, and all persons who swore that they had not actively participated against the Union were allowed to apply. This low threshold enabled a mass of white applications. In addition, blacks had to face the extra difficulty of racial prejudice and discrimination.

[6] The categories had different colors assigned, ranging from the most desirable green (homogeneous white new housing) to the "disturbing" red (for racially mixed or all-black old areas).

In his seminal work, *The declining significance of race*, William Julius Wilson (Wilson, 1978) suggested that historical ethnic discrimination is less restrictive than the social class aspects on the determination of blacks' life chances. Education is the crucial factor in determining whether blacks reach similar economic success to whites. Hence, race seems to have importance only as an ever present product of an oppressive past. More precisely, in his work *The truly disadvantaged*, Wilson points to the double jeopardy operating in the case of low income-black Americans, since they accumulate the disadvantages of class and race. Disadvantages that are passed from generation to generation. For Wilson, ethnic inequalities seem to be the product of economic disparities rather than of an active performance of racism. But, is this true? Are the perks of being upper class the same for all ethnicities? Does parental education compensate for ethnic discrimination? Or does the benefit of being upper class fade when it collides with the blemish of historic racial discrimination? Chapter 3 aims to answer these questions.

2.2.3 The institutional framework

2.2.3.1 The land of the free and the home of inequality

The US has meritocracy as its dogma. In 2010, Americans strongly believed that economic achievement depends upon meritocratic factors just as much as they believed this in 1987 (Reynolds & Xian, 2014). Like Korea, the US spends a fair part of its GDP on education (slightly less than 8% in 2010). Its educational expansion, however, has been much less dramatic than the Korean. The average years of total schooling were 12.04 in 1970, and slightly higher in 2006 (13.75). According to data from the US census, the percentage of people of 25 years and older with less than high school completion has steadily decreased since 1940. Not only have the holders of high school diploma increased, but so have those with a bachelor's degree or higher. In 2012, they represented over 25% of the population aged over 24 years. If we focus only on those within the age range of 25-34, the percentage rises to 43% in 2013 (according to OECD data). Yet, the US's educational expansion has not led to higher social mobility; on the contrary, money does not only buy success, but nowadays it buys more success than it used to (P. N. Blossfeld, Blossfeld, & Blossfeld, 2015; Reardon, 2011).

With more than 25% of its citizens holding a tertiary degree, the competition to reach the top of society is tough. However, these tertiary degrees do not have the same value: those Ivy league universities[7] are much more appreciated, and this is something the upper social strata are aware of. Indeed, research has proved that credentials from super-elite universities are more valued, although they are not the only factor to ensure a high profile job (Rivera, 2011). Following the logic of elite upper education institutions, elite professional employers look for non-academic characteristics in their prospective employees such as extra-curricular activities. Thus, it appears that since upper-tier institutions have opened their gates to diversity, extra-curricular activities during tertiary education have been used as a sign of social status, and of "fitting-into" the culture of the firm (Rivera, 2011).

[7]The Ivy league universities are: Brown University, Columbia University, Yale University, University of Pennsylvania, Stanford University, Cornell University, Dartmouth University, and Harvard University

2.2.4 The formal education system

2.2.4.1 Standardization of the national curricula

In contrast with Korea, there is no national school system in the US and nor does it have national framework laws prescribing curricula or controlling other aspects of education. The education system, hence, does not only differ from state to state, but from district to district. In addition, its funding mainly depends on local authorities which, taking into account the high residential segregation by socioeconomic background and ethnicity, leads to a significant divergences in resources between the most wealthy and least wealthy school districts and between ethnicities.

The No Child Left Behind Act

There are, however, some basic laws that aim to ensure equal opportunities for all students throughout the country. In this regard, the *No Child Left Behind Act* (NCLBA) of 2001 can be considered the most important one[8]. It was designed to improve student achievement and it also pursues a change in the US school culture through four paths:

1. Accountability for results.

2. Emphasis on doing what works based on scientific research.

3. Expanded parental options.

4. Increased local control and flexibility.

The NCLBA seeks to have every child achieving at a proficient level according to state-defined educational standards. In order to achieve this, every state must develop benchmarks to assess progress and make sure that children are learning. States are required to perform annual evaluations in reading and mathematics for students in grades 3 to 8, and they must disclose the results disaggregated by diverse subgroups. Those schools that do not meet the state's *adequate yearly progress* for two years in a row are identified as *in need of improvement*, and they are provided with assistance to progress. Concretely, school officials are asked to work with parents, school staff, the district, and outside experts, to develop strategies to boost the academic achievement of the school's students. These schools might also receive grants to implement the developed plan. The aforementioned plan must use scientifically-based research, which has been proven as effective, and are supported by federal funding.

The NCLBA provides parents with more information about their children's progress via state assessments. It also supplies them with information about their offspring's school, providing easy-to-read report cards on schools and districts that include information about which schools are successful and why. The report cards include results desegregated by ethnicity, and gender, English-language proficiency, migrant status, disability status, and low-income status, as well as information about the teachers' credentials. In the first year during which a school is identified as *in need of improvement*, NCLBA gives those parents whose children attend them the option to transfer their child to another public school (including charter schools) in the same district. In order to facilitate the transfer, transportation must be provided, within certain cost limits. If a

[8]The NCLBA was substituted by the *Every Student Succeeds Act* (ESSA) in December, 10th of 2015 by the president Obama. However, in the period under analysis the NCLBA was the ruling law.

school is identified as being *for improvement* for more than one year in a row, NCLBA must provide public school choice, and offer students from low-income families who remain in the school the option of obtaining free supplemental educational services, such as tutoring. In exchange for such accountability requirements, NCLBA gives states and local school districts more flexibility in the use of their federal funding. Hence, schools have more freedom to implement innovations and allocate resources. It also fosters teacher development through the *Improving Teacher Quality State Grants* program.

However, the NCLBA can also have have some perverse effects. First of all, the responsibility for establishing the threshold of success relies on the states. In other words, those ones under evaluation establish the threshold of whether they are succeeding or not. In order to ensure the accomplishment of their pupils, states may lower the threshold of achievement instead of fostering their students' learning. Secondly, achievement is measured solely according to standardized tests. This might lead to a greater focus on test-centered teaching, instead of on learning, rewarding those schools that are more proficient in training their students on a how-to-pass-the-exam approach to education. Thirdly, the label of "failing school" might lead to a self-fulfilling prophecy. This is because high achievers would leave the school at the first chance and potential good students will avoid the school. In addition, the school will still have students, since not all of them will be able to transfer, thereby stigmatizing the remaining ones. The NCLBA also assumes that parents will be able to make a good use of the reports. Yet, parents from a low social class may not have the tools to fully comprehend the means at their disposal, or have the knowledge of what to do when the school is failing. They may also have more difficulties in assuming the costs of the transfer, and the uncertainty of where to go might be a huge obstacle for them. Finally, the NCLBA gives students the chance to transfer to another school within the same district, and due to the high residential segregation, this does not ensure that children from failing schools will have much better options. If there is slight improvement, and given the high uncertainty of transferring, they may be more willing to stay than to leave.

2.2.4.2 Early childhood education

In the early 1960s the president of the United States, Lyndon B. Johnson, declared the war on poverty. As part of the government strategy to break the circle of poverty, the government tried to supply a head start to children from low-income families. In doing so, they created the Head Start program, which gives children and families a comprehensive education by supporting the mental, social, and emotional development of children from the early stages of life. In addition, the program also supports children and their families with health, nutrition, social, and other services, with the aim of alleviating the perverse effects of poverty in children's lives. The program grew enormously: in 1977 the bilingual and bicultural programs were being implemented in 21 states; the budget increased to 1 billion dollars in 1984; and in 1985 the Early Head Start program was also implemented.

The Early Head Start program serves pregnant women, infants, and toddlers. It is available to the family until the child turns 3, when (s)he is ready to enroll in Head Start or another preprimary school program. While Head Start provided half-day or full day services, Early Head Start provides for, at least, six hours of care per day. It also provides home-based services, where staff visit the

children once a day and work with the parents and the child's primary teacher. In addition, families in the home-based program meet twice a month with other enrolled families, creating a good network for them to compare and learn from each other's experiences. Since 1965 the program has provided its services to over 30 million children, and it has grown from an 8-week demonstration project to include full-day/year services.

Yet, the program would not have survived without the scientific evidence supporting the benefits of early education, especially, for low-income children. The High/Scope Perry School program is perhaps the best-known study analyzing the effects of a high-quality preschool program for poor children. It used a sample of 123 African American children - from 100 families - with ages 3 to 4, from Ypsilanti (Michigan) living in the school district of the Perry Elementary School. The program randomly assigned - flipping a coin - children to treatment (58 of them) and non-treatment (65 children) groups. The treatment consisted of a high-quality preschool program, in which teachers conducted daily 2 1/2-hours classes for children on weekday mornings, and made weekly 1 1/2- hour visits to each mother and child on weekday afternoons. The study pointed out that high-quality programs for children living in poverty not only improve their educational performance but also help their economic development, and prevent them from committing crimes, while their economic returns are much higher than their costs. The evidence of this study is supported - with diverse evidence - by the Abecedarian study and the Chicago Child-Parent Centers Study.

But, preprimary education in the United States is not only about these programs, but has diverse forms, such as nursery schools, preschools, day care centers, prekindergarten, and kindergarten. Finally, the vast majority of 5 year olds attend free public kindergartens. In fact, most public elementary schools offer free kindergarten education, with classes of up to 20 students.

2.2.4.3 Compulsory education characteristics

The age of compulsory attendance varies by state: it ends at age 16 in thirty states, at age 17 in nine, and at age 18 in eleven states, plus the District of Columbia[9]. In the US public schools are tax-supported and free of charge to students. Pupils borrow free textbooks from the school, but they have to purchase their own supplies (for example, paper and pencils).

Due to the baby boom effect of the post-Second World War period, the total enrollment in public and elementary schools grew dramatically during the 1950s and 1960s, reaching a peak per year in 1971 (Snyder & Dillow, 2012). Nowadays, elementary and secondary education lasts for 12 years, yet, its organization varies among school districts and states. In most cases, elementary education spans from six to eight years, followed by four to six years of secondary education. The students commonly complete high school by the age of 18. In case pupils decide to continue their education, they can enter technical or vocational institutions, two year community colleges or a four-year college/university.

Regarding the curricula, states set broad guidelines about what students should know and be able to do, and school districts select their textbooks according to these guidelines. Schools and teachers are expected to determine content details and the pace of teaching in a manner that suits the characteristics of students. At secondary stages, each student takes courses that are required for graduation - the requirements vary by district and state - and elective courses.

[9] A figure with the core structure of the education system is available in the Appendix A.

It was during the 1990s when the fever for assessment and academic standards started to intensify in the US. By 2001, due to the NCLBA, most of the states had established academic standards that defined what a student must know in mathematics, languages, the arts, natural sciences, and social sciences. But it is not only the states that assess progress; the National Assessment of Educational Progress (NAEP) tests a random sample of US schools. Yet, the NAEP does not display individual or school scores. It essentially provides results regarding subject-matter achievement, school environment and subgroups. Since 2002, NAEP results are also disaggregated at the state-level.

One of the main differences between the Korean and the US education systems is in school choice. While in the former students are randomly assigned to schools, freedom of choice is widespread in the latter, constituting one of the most basic rights that parents have regarding their offspring's education. In most cases, public school districts assign students to a particular school depending on the student's place of residence and, usually, schools accept all the students assigned. Yet, many states do make an effort to provide parents with a wider range of alternatives through options such as open enrollment programs, magnet schools, charter schools, virtual schools, dual enrollment programs, scholarship programs (such as vouchers), and tax credit/deduction programs.

Parents can also choose between public and private schools. Almost one fourth of US elementary and secondary schools are private, and they enroll 10% of all students. The vast majority of them (77%) have a religious affiliation (Snyder & Dillow, 2012), and all have the freedom to chose their student body from those who apply to them. The funding for these private schools comes, mainly, from nonpublic sources, such as tuition payments, foundations, religious bodies, alumni or private donors. The average cost of private elementary and secondary schools is $4,689 per pupil (Snyder & Dillow, 2012). Parents have also a third option: home schooling. In fact, 2% of US children from ages 5 to 17 receive their education at home (Snyder & Dillow, 2012).

2.2.4.4 Post-secondary education

Although its history dates back to the Colonial Colleges, the US higher education system began its expansion following World War II (Roksa, Grodsky, Arum, & Gamoran, 2007). In 1910, only 2.7% of the US population over the age of 24 held a bachelor's degree, a percentage that grew slightly during the following three decades. After World War II, enrollment in higher education was boosted by the federal government, driven by the GI Bill, and consisting of student aid for war veterans. While in 1940 the percentage of persons from ages 25 to 29 with a bachelor's degree was 5.9 (6.4% for whites and 1.6% of blacks) this proportion rose to 16.4% in the 1970s (17.3% of whites and 10% of blacks). Nowadays, 33.5% of youth from the ages of 25 to 29 holds a bachelor's degree or higher and, although the gap between the ethnicities has narrowed, it was still substantial in 2012: almost 40% of whites held a tertiary degree, while 23.2% of African Americans, 14.8% of Hispanics, and 59.6% of Asians did (Snyder & Dillow, 2012).

The expansion of higher education in the US has been characterized by a noteworthy variation among institutions. While post-secondary education is open to nearly all high school graduates, there exists a great and strongly-established hierarchy of higher education institutions (Roksa et al., 2007). High school graduates who decide to continue their education may enroll in specialized/technical institutions, 2-year community or junior colleges, or a 4-year college/university.

The quality and value of the degrees obtained depends on the amount of time required to obtain them, and the prestige of the institution that supports the credential. There are a few highly selective institutions, known as the Ivy League universities, followed by second-tier and third-tier institutions, such as medium and low selective universities, and community or junior colleges. In fact, the aforementioned increase in enrollment has not been equally distributed across these institutions. During the post-war period, the increase in enrollment was led by the public sector, specifically, community colleges. This may be due to the open-door admissions policy, the relatively low tuition fees, flexible attendance patterns and, perhaps, the distance from students' homes (Roksa et al., 2007). As a consequence, community colleges recruit a disproportionate number of working-class, minority, female, and older students. In contrast, students from a high socioeconomic status tend to be overrepresented in the 4-year institutions and elite colleges and universities (Ellwood et al., 2000; Roksa et al., 2007), and the comparative advantage of these students has even increased for recent cohorts (Reardon, Baker, & Klasik, 2012; Roksa et al., 2007).

It seems that while expansion has brought in students from non-privileged social backgrounds, inequalities still exist, and they have even grown in the last decades (P. N. Blossfeld et al., 2015; Reardon, 2011; Roksa et al., 2007). Following the reforms in financial aid and the rise in tuition fees in the Reagan era (early 1980s) the impact of social background for college entry students has increased. In fact, research has shown that the US education system is not becoming more egalitarian with the education reforms or over time (Reardon, 2011; Roksa et al., 2007). This might be because the cost of higher education is huge. Indeed, tuition rises in accordance to the prestige status of the institution. As a way of illustration, in 1990 Ivy League tuition fees were seven times the cost of in-state tuition (Roksa et al., 2007). There are, however, financial aid and loans available for students. In 1972 the government developed the Pell Grant program, which nowadays is the largest federal needs-based grant program for students in higher education (Roksa et al., 2007). However, it is not only students from disadvantaged backgrounds who can apply for financial aid, but students from middle-class families also have that option: the Stafford Loan Program. Since 1970, however, federal assistance tends to rely more on loans than grants.

Social class is not the only variable by which higher education in the US is stratified, there are also important gaps between ethnicities. During the first half of the twentieth century, educational institutions were commonly segregated by race but after the Civil Rights Act desegregation became unavoidable. Before the Civil Rights Act, upper-tier institutions only enrolled 2.3% of African Americans. Once the Act was passed, the institutions began to actively seek the diversification of their student body. They implemented different strategies, such as enrichment camps and the active recruitment of minorities, as well as the inclusion of nonacademic variables in the admission policy, so as to facilitate the enrollment of minorities (Roksa et al., 2007). Such affirmative action, however, has lost government support in the last decades, and it has even been under attack in court. Still, although challenged, it survives, especially among the most selective group of universities: the Ivies.

2.2.5 The different shades of inequality in United States

The fact that the High/Scope Perry School program had low-income African American families as a target is not coincidental. Poverty and its consequences affect African Americans and Hispanics

much more than they do whites. At the same time, racial and economic segregation produces neighborhoods with high levels of concentrated poverty, and the only inheritance that parents can pass on to their children is their low social status. Equal rights did not bring equal opportunities to African Americans and Hispanics, and they still underperform their white and Asian counterparts in school. Thus, privilege in the US society and educational system has two main sources: ethnic background and social class.

One of the most acknowledged causes of the achievement gap between ethnicities is the fact that ethnic minorities tend to be part of the lower social classes. Logically, if poverty is much more prevalent among African Americans and Hispanics than among whites or Asians, then their academic performance might be hampered due to the lack of capital. Yet, even when controlling for income, race is still a significant factor affecting the lives of children. Since white parents hold tertiary degrees in higher proportion than their black and Hispanic counterparts, the achievement gap might have its origin in the diverse levels of parental human capital between ethnicities. Yet, even when parents from ethnic underprivileged backgrounds hold a tertiary degree, race persists as a crucial factor (Reardon, Baker, & Klasik, 2012)

The causes of the comparatively lower achievement of low-income African American and Hispanics has been deeply studied, yet, little is known about how ethnic background shapes the educational opportunities of upper social class children. In this regard, the perks of being upper social class are not the same for every child. Skin color shapes the ways in which knowledge and money work. Chapter 3 suggests that while some children accumulate the benefits of their privileged ethnicity along with the advantages of their social class, other children see how their initial social class advantage fades when it comes into collision with their underprivileged ethnicity.

2.3 The Federal Republic of Germany

2.3.1 Justification

The most salient characteristic of the German educational system is its multi-tiered secondary educational stage. In contrast with both the US and Korea - where the tracking system starts at upper secondary education - tracking by ability starts at age 10, sorting pupils according to their performance into three different types of schools. Yet, there have been reforms towards a more integrated system, and the share of schools that combine more than one track has increased. Still, more than half of the variation in performance is observed between schools (OECD, 2012a). This highly-stratified system must affect the educational opportunities of the most privileged social groups while, simultaneously, it offers a great contrast with the other two case studies.

Germany is a federal state. Like the US, the authorities in charge of education are the Länder, which may affect the standardization of educational provision nationwide. The highly stratified system at a secondary level ensures that only the highest performers get to university, which produces a low level of credential inflation. Furthermore, tertiary education is not as stratified and hierarchical as in the US and Korea, although there are still two kinds of higher education institution: universities of applied sciences (Fachhochschulen) and traditional universities. Finally, the German system has improved in the last years. From 2003 to 2012 German scores in PISA have risen, largely due to the better performance of low achievers and disadvantaged students. In

contrast with Korea and the US, the system appears to have become fairer and the gap between social classes has narrowed since 2003 (OECD, 2012a)

Thus, Germany has a highly stratified secondary education system, which leads to a low stratified tertiary education, contrasting with the systems of Korea and the US. In addition, the patterns of inequalities also seem to differ. While the gap between rich and poor appears to be increasing in the US and Korea, it is decreasing in Germany. In addition, the system is the responsibility of the Federal States (like in the US) but a certain degree of harmonization and comprehensiveness between Länder is possible thanks to the coordination of the different states and ministers of Education.

2.3.2 Socioeconomic framework

Following the end of the Second World War, Germany was divided into American, British, Soviet, and French zones of occupation. Unable to reach an agreement, the Western forces and the USSR divided the country into two: the Federal Republic of Germany (West) and the Democratic Republic of Germany [DRG] (Soviet), both born in 1949. The separation was meant to be a temporary solution, but due to the escalating tensions between Western and Soviet powers - the so-called Cold War - the division endured for 40 years. The separation of the two Germanys was cemented with the construction of the Berlin Wall in August of 1961. Following the collapse of the communist regime and the Soviet Union, the DRG had its first free, democratic elections, after which the DRG unified with the Federal Republic of Germany on the 3rd of October 1990. The end of the division was imminent and in 1991 the Berlin Wall was finally dismantled.

Since the Unification Treaty of 1990 the Federal Republic of Germany has been made up of 16 Länder,[10] including 3 city states.[11] Although unified, the differences between West and East Germany are still salient. The former received the aid of the US, which boosted its economy and helped to overcome the hardships of the war. The latter was under Soviet influence, leading to a communist labor and social structure that - after the disintegration of the Soviet Union - collapsed. Since the unification, Germany has established the harmonization of the economic and social conditions as its main goal.

Germany has become the engine of Europe, and its GDP growth was positive during 1990s. Its education system provides a skilled labor force to the German labor market, producing low unemployment rates and fostering its economy. However, the Recession of the mid-2000s was a significant setback for Europe's engine, and its GDP growth turned negative in 2009. Still, Germany appeared to recover rather fast from the hardship and resumed a positive growth path soon after (Figure 2.3).

Although the Great Recession seems to have slightly increased social inequalities in the German Federation, it is also true that is one of the most socially cohesive countries in Europe. Its welfare state ensures that - despite initial inequalities of income distribution - German citizens get a minimum standard of living conditions. In fact, Germany has the most developed welfare state of the three case studies.

[10] Baden-Württemberg, Bayern, Brandenburg, Hessen, Mecklenburg-Vorpommern, Niedersachsen, Nordrhein-Westfalen, Rheinland-Pfalz, Saarland, Sachsen, Sachsen-Anhalt, Schleswig-Holstein and Thüringen

[11] Berlin, Bremen and Hamburg

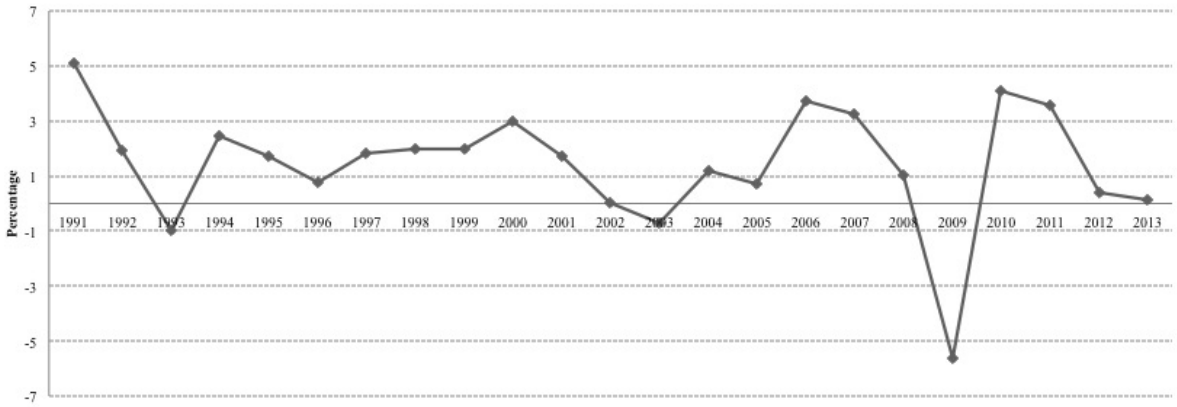


Figure 2.3: GDP Growth (%) in Germany (1991-2013). Source: *World Development Indicators*, World Bank.

2.3.3 The institutional framework

The German education system and its labor market are strongly integrated and coordinated. The system responds to the needs of the labor market, and it ensures a skilled labor force. In this regard, 29.99% of its population aged 25-35 attained a tertiary education, and 56.44% have upper-secondary or post secondary non-tertiary education. To maintain this educational system, Germany spends around 5% of its GDP on education (World Bank Indicators data). Thus, Germany is the system with the lowest investment in education from the three case studies. However, most of this investment comes from public (around 4% of it) rather than private sources (around 0.60%), which leads to low costs of higher education, since it is the state not families who invest in education.

In Germany, the responsibility for the education system relies on the Länder, unless the *Basic Law* establishes otherwise[12]. This law establishes the responsibilities of the Federation regarding the regulation of the following domains (Lohmar & Eckhardt, 2013):

1. In-company vocational training and vocational further education.
2. Admission to higher education institutions, and higher education degrees. Yet, Länder may pass laws at variance with the legislation of the Federation.
3. Legal protection of participants of correspondence courses.
4. Regulations on entry to the legal profession.
5. Regulations on entry into the medical and paramedical professions.
6. Employment promotion measures as well as occupation and labor market research.

In addition, the Basic Law also promotes and regulates the coordination between the Länder and the Federation regarding research facilities and projects, aside from institutions of higher education (Lohmar & Eckhardt, 2013).

In sum, the German system is decentralized, with the Länder mainly responsible for the regulation and provision of education. Yet, the German Federation does have the power to intervene

[12]A figure with the structure of the education system is available in the Appendix A.

and establish a certain degree of comprehensiveness between the federal states. In addition, the system is highly stratified at the secondary level, grouping children into different tracks depending on their demonstrated ability (around the age of 10). This stratified system is strongly coordinated and integrated with the German labor market, which absorbs the skilled labor force provided by the education system.

2.3.4 The formal education system

2.3.4.1 Early childhood education

From the age of 3 up to starting school, every child has the legal right to day-care in a child-care facility. In general, before the age of three, children are looked after in *kinderkrippen* - crèches - and, from age 3 up to starting school, in *kindergarten*. Yet, in the past years, these institutions have increased their variety, and more group-age-specialized centers have emerged. This increasing specialization might be due to the agreement to expand the early childhood education - before age 3 - by the Federation and Länder (Lohmar & Eckhardt, 2013). This expansion aims to create a needs-oriented supply of early childhood education for children under 3 years old.

2.3.4.2 Primary education

Primary education in Germany is compulsory for all school-age children. It comprises grades 1 to 4, with the exception of Berlin and Brandenburg, where the *Grundschule* covers six grades. It encompasses the transition from Kindergarten - where learning is more play-oriented - to more methodical forms of school learning (Lohmar & Eckhardt, 2013). In addition, it adapts the curricula to suit the different learning requirements and skills of pupils. Its main goal is to provide the pillars on which the next educational levels and lifelong learning will rest. Linguistic competences and a basic understanding of mathematics and sciences are the core of the educational process (Lohmar & Eckhardt, 2013).

The fundamental rights and duties regarding primary education are regulated by the Basic Law and the constitutions of the Länder. In addition, the local authorities (*Kommunen*) must guarantee a well-balanced choice of education in the area (Lohmar & Eckhardt, 2013). This implies that school planning - the school capacity required and location of schools - is a joint task between the local authority and the *Ministries of Education and Cultural Affairs* of the Länder[13] (Lohmar & Eckhardt, 2013).

The choice of school is not as wide as in the US but not as limited as in Korea. Generally, children attend the local primary school, yet, some Länder try to increase the school choice of parents. For example, since the 2008/2009 school year, in Nordrhein-Wesftalen parents are free to enroll their offspring in a primary school other than the one closest to their home In addition, the school bodies can fix catchment areas, making them bigger or smaller. In Brandenburg, the catchment areas may overlap, giving parents more options.

In primary education, all children move from grade 1 to grade 2. From grade 2 onwards, children can be promoted or retained. The decision of whether to promote or retain the pupil is

[13]Bayern is the only exception, in which the schools are mostly established by the Land, in consultation with the local authority.

based on the marks obtained in the school report at the end of the school year. In the 2010/11 school year, only 1% of pupils were retained in primary education (Lohmar & Eckhardt, 2013). Finally, once primary education is finished there is no leaving examination nor certification.

2.3.4.3 Secondary education and post-secondary non-tertiary education

Secondary education in Germany is highly stratified, and there are lower and upper secondary levels of education. The former comprises grades 5/7 to 9/10 and, commonly, enrolls pupils from ages 10 to 15/16[14]. The main goal of lower secondary education is to prepare children for upper secondary courses, and it offers a rather general education. In contrast, upper secondary focuses on vocational or academic education, and is much more specialized. It enrolls children from ages 15/16 to 18/19. Secondary education institutions differ in terms of both duration and school leaving qualifications. Yet, they are interrelated and transfers from one to another are allowed under certain circumstances.

The organization of lower secondary education in Germany is built on the principle of basic general education, individual specialization, and fostering students in keeping with their abilities (Lohmar & Eckhardt, 2013). Following the primary education stage, where children with different abilities are mixed, lower secondary education segregates pupils according to their demonstrated abilities and skills. In this regard, there are four main institutions of lower secondary education, differing in duration and school leaving qualifications: *Hauptschule*, *Realschule*, *Gymnasium*, and *Schularten mit mehreren Bildungsgängen*.

Hence, the tracking system starts at the age of 10 and, although there might be a transfer from institution to institution, children already know the educational path they will follow. *Hauptschule* - the least demanding level of lower secondary education - provides its pupils with a basic general education, which allows them - depending on achievement and preferences - to specialize. In case they have the required qualifications, they may continue their education, mostly on vocational training courses, but sometimes even on courses leading to a higher education entrance qualification. Generally, it covers grades from 5 up to 9, yet, it can also include grade 10[15]. *Realschule* provides students with a more extensive general education than the Hauptschule. It can lead - depending on the qualifications - to vocational training, but also to higher education. Generally, it includes grades 5 to 10. The *Gymnasium*, which is the most demanding and prestigious track, provides students with intensive general education, and is the most academically oriented educational path. It generally covers both the lower and upper secondary level, and it lasts from 5th to 12/13th grade. In addition to the standard *Gymnasien*, there are special types of Gymnasium to which Hauptschule and Realschule pupils can transfer following grade 7. This tracking path leads to the *Allgemeine Hochschulreife* (Abitur), which is gained after 12 years of education and, eventually, allows entrance to higher education. The *Schularten mit mehreren Bildungsgängen* are institutions that provide several courses of education. They provide instruction in subjects and grades organized according to the qualification pursued, or in courses divided into two or more levels of proficiency defined by the curriculum covered.

[14]The grade and age varies depending on the Länder.

[15]In case they want to obtain the *Hauptschulabschluss* or *Mittlerer Schilabschluss* certificates.

The lower secondary school choice is subject to different regulations, depending on the Länder. In some federal states, the choice of school and track is made at grade 4, in others at grades 5 or 6, while the rest make the decision once grade 6 is completed. This decision does not have to be made if the child is entering an integrated comprehensive school. Generally, during grades 4 to 6, the decision regarding the tracking placement is made by taking into account the school transcript and progress made during primary school. The final decision is made either by the parents, the school, or the school supervisory authority. Yet, the school evaluation is considered either as the basis of the decision or an aid to it. Regardless of the allocation to one track or another, grades 5 and 6 constitute a period of orientation and especial promotion, in order to establish the pupil's subsequent educational paths and in which sphere (s)he should focus. After grade 6, the school types and curricula progressively diverge, making transfer from one track to another increasingly difficult.

Retention due to bad performance is more common than in elementary school. Parents must be informed by mid-year if promotion is at risk and, in some Länder, the school is compelled to provide assistance in class to a pupil which whose promotion is in peril with, for example, individual assistance programs or holiday classes (Lohmar & Eckhardt, 2013). Once lower secondary education is completed, pupils may receive a leaving certificate conditional on their successful completion of grade 9/10. Yet, pupils at the Gymnasium, do not receive such a leaving certificate but a qualification to enroll in the *Gymnasiale Oberstufe*, the upper level of Gymnasium.

The upper secondary educational stage provides both vocational and academic tracks. While the former prepares the pupils for the job market, the latter trains them for higher education. The *Gymnasiale Oberstufe* is divided into an introductory phase (first year) and two more years of a qualification phase. Although pupils have some compulsory subjects, the secondary phase opens them up to specialization. The subjects are grouped by areas[16] and students must take subjects in all areas. The subjects are taught at different levels of academic standards (Lohmar & Eckhardt, 2013). Different combinations regarding the number of subjects and academically demanding levels must be made. In this regard, the *Abitur* examination must include: at least two subjects at an "increased level of academic standards"; two of the following three subjects: German, a foreign language or mathematics; and, at least, one subject from every main area of compulsory subjects. In addition, the second phase of the Gymnasiale Oberstufe is known as the qualification phase. This is because the marks obtained during this phase, together with the Abitur examination marks, are used to calculate a student's total marks for the Zeugnis der Allgemeinen Hochschulreife - the general higher education entrance qualification.

Vocational upper secondary education includes diverse type of schools. The *Berufsfachschulen* are full-time schools with a very wide range of courses. Pupils are offered vocational education and training in one - or several - *anerkannte Ausbildungsberufe* (occupations requiring formal training). Depending on the course, the Hauptschulabschluss or Mittlerer Schulabschluss might be required. In addition, under certain requirements, the *Fachhoschulreife*[17] may be acquired. The *Fachoberschule* requires the *Mittlerer Schulabschlus* certificate, and it spans from grades 11 to

[16]These areas are: language, literature and art (German, foreign languages, fine art and music); social sciences (history, geography, philosophy, social studies/politics, economics); mathematics, natural sciences and technology (mathematics, physics, chemistry, biology, information technology).

[17]Higher education entrance qualification for Fachhochschlule

12. It provides deeper instruction than the Berufsfachsulen and leads to Fachhochschulreife[18]. As a condition for the successful completion of grade 13 (in some Länder) pupils can obtain the *Fachgebundene Hochschulreife*, and - in case they have sufficient competence in a second foreign language - the *Allgemeine Hochschulreife*. In addition, relevant vocational education and training or work experience may serve as a substitute for grade 11, so that students can start directly in grade 12 (Lohmar & Eckhardt, 2013). The *Berufliches Gymnasium/Fachgymnasium* exists in some Länder as a form of Gymnasiale Oberstufe, but with a career oriented approach. In addition to the academic subjects, students can choose courses that are more career oriented, such as business. It is also possible to obtain more than one qualification at a time. Finally, the *Berufsoberschule* have been established to help those who obtained their vocational education in the *duales system* to get an entrance qualification to higher education. It offers two years of full-time education for this aim. Yet, admission to *Berufsoberschule* requires the *Mittlerer Schulabschluss* or equivalent qualifications.

In Germany vocational education is known as the *duales system* because it is done in two places: the vocational school and the workplace. This combination provides the student with the knowledge and practice required to perform his/her job in the labor market. *On the job* training is available in industry and commerce, but in the civil service sector too. There are also regulations regarding *on-the-job* training, which are given in the *Ausbildungsordnugen*. These regulations are independent of the companies' needs, and set national standards for in-job training. Not all companies can participate in this training, they must qualify for it. The qualification is supervised by the authorities responsible for vocational training of the different sectors of industry (Lohmar & Eckhardt, 2013). To be qualified as such, companies must have training personnel with technical qualifications, able to provide the skills demanded by the training regulations (Lohmar & Eckhardt, 2013).

2.3.4.4 Higher Education

Higher education is the responsibility of the federal states. The authority of the Federal Government is limited to establishing a Framework Act for higher education, and to its cooperation in the financing of buildings and investment (Mayer, Müller, & Pollak, 2007). The tertiary system is, mainly, government financed and tuition free.

The roots of the German education system have their origins in the Humboldtian reform of the University of Berlin in 1810 (Mayer et al., 2007). The reform spirit included the unity of research and teaching and free access to higher education (Mayer et al., 2007). Hence, higher education institutions in Germany are financed by the government, are autonomous as regards their teaching and research programs, and have the monopoly over the education of professionals (Mayer et al., 2007). The system essentially expanded during the 1960s and 1970s, in order to train teachers for the baby boomers (Mayer et al., 2007). Later on, the baby boomers boosted the expansion by enrolling in both *Fachhochschulen*[19] and traditional universities. After the reunification of West and East Germany, the West German model was basically transferred to the Eastern States (Mayer et al., 2007).

[18]The entrance qualification for the Fachhochshule - tertiary education

[19]Universities of applied sciences.

In order to be enrolled in higher education institutions, students must pass the *Abitur* exam or a certificate restricted to the *Fachhochschulen*, however, not all the students entitled to higher education do enroll in it. In fact, 16% of the new entrants on vocational programs in 2001 held the Abitur (Mayer et al., 2007), and 25% of entrants to higher education had already completed vocational training programs (Mayer et al., 2007). Thus, the patterns of entrance to higher education have become more diverse and, as the has become more comprehensive, the routes towards tertiary education have diversified.

There are different types of higher education institutions. The *Fachhochschulen* are universities of applied sciences. They offer academically based programs but with a practical orientation and the courses usually last for three-and-a-half years (Lohmar & Eckhardt, 2013; Mayer et al., 2007). These institutions experienced their most salient growth during the 1980s and 1990s, although, despite this rapid growth only a minority of the student body enrolls in this kind of institution (Mayer et al., 2007). In addition, Fachhochschulen may be more attractive for working-class and low-income students, since they require a lower investment than traditional universities. Another kind of higher education institutions - traditionally left out of the analysis - are the *Berufsakademien*[20]. These generally offer three-year programs that combine on-the-job training with college attendance (Mayer et al., 2007). Like the *Fachhochschulen*, they are mainly focused on economics and engineering programs (Mayer et al., 2007).

Traditional universities are academically oriented. Access to them is conditional on possession of the Abitur and, generally, pupils have unlimited access to tertiary education - although there are *numerus clausus* in some disciplines. This kind of tertiary education is perhaps be much more attractive for the offspring of the service class because it leads to more prestigious jobs, partially ensuring class maintenance (Mayer et al., 2007). Like the rest of the system, traditional universities are tuition free, although, relative risk aversion mechanisms may push working-class children into opting for vocational training or universities of the applied sciences.

Although in Germany traditional universities meet the same educational standards nationwide - unlike in the US and Korea, where there are a few highly prestigious universities - there is some stratification in higher education: instead of stratification within the universities there is stratification between types of institutions. Yet, universities of applied sciences have increased their prestige, and their labor-oriented courses provide students with valuable skills and abilities. Still, traditional universities seem to be much more attractive for the children of the upper social class than for the working classes (Mayer et al., 2007).

[20] Colleges of advanced vocational studies.

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CHAPTER 3

WHAT MONEY CANNOT BUY: THE PERKS OF BEING WHITE IN THE UNITED STATES EDUCATIONAL SYSTEM

This chapter constitutes the empirical study of how membership of a (dis)advantaged ethnicity affects the educational opportunities of upper-class children in the United States (US). More precisely, it aims to disentangle whether the benefits of being upper class are strong enough to overcome the obstacles that ethnic disadvantage puts in their way or if, on the contrary, they fade when they collide with ethnic discrimination.

The chapter is organized as follows. Firstly, the puzzle and the theory developed with the aim to solve it are introduced. Secondly, the relevant research so far developed regarding Ethnic Inequalities of Education opportunities (EIEO) is presented and, at the same time, the socioeconomic framework linked to the processes of social stratification within and between ethnic communities in the US is introduced. The methodological approach and the measures used in the empirical analysis are detailed in the fourth section of the chapter. Finally, the results are presented, together with the discussion and further research opportunities.

3.1 Introduction

Privilege in the United States (US) has two main sources: ethnicity and social class. In a point of fact, the achievement gap between rich and poor is now wider than it used to be (Reardon, 2011); furthermore, the gap between the ethnicities increases as we move up the social hierarchy (Reardon, Baker, & Klasik, 2012). That being the case, we could infer that the benefits of being upper class appear to be higher for whites and Asians than for blacks and Hispanics. At the same time, blacks are underrepresented in the most selective US universities, and the income gap between ethnic groups does not fully account for these differences in enrollment and achievement (Reardon, Baker, & Klasik, 2012). White children are two to three times as likely as African-American students to be admitted into highly selective universities, even after controlling for income (Reardon, Baker, & Klasik, 2012). Previous research, however, has neglected the analysis of how ethnicity influences the upper social class educational opportunities. As if being upper class was an antidote against

discrimination, children from high social strata are analyzed as a homogeneous group, safe from the blemish of ethnic prejudice. Nevertheless, class advantage may help to overcome the obstacles that membership of an ethnic minority entails, but it does not make them disappear.

Despite the fact of being an ethnic minority, Asians tend to be among the highest performers in the US. The differences in performance with regard to other ethnic minorities could be due to the contrasting treatment of these minorities throughout US history. In this vein, both chattel slavery and ethnic segregation have been much more damaging for blacks and Hispanics than for Asians. The different exposures to prejudicial practices have influenced the way in which social stratification processes have blossomed within ethnic communities (Pattillo-McCoy, 1999) shaping, simultaneously, the educational opportunities and life chances of children of different ethnic minorities. In this regard, the theory presented here holds that when upper class intersects with ethnicity, educational opportunities will be affected by the "distance" between the status entitled to the individual's ethnicity and white Americans. In other words, as the historical relationship of a specific ethnicity with whites improves also does the degree of privilege entitled to that ethnic minority; in a similar way, as the the relationship of an ethnicity with whites worsen, the degree of privilege entitled to that ethnicity decreases.

The main hypothesis of this research holds that the educational performance of children who add ethnic and class privilege will be higher than the performance of children whose class advantage collides with ethnic discrimination. For example, a white upper-class child will perform better because his/her academic performance is boosted both by his/her ethnic and class privilege; in contrast, the performance of a black upper-class child will be boosted by just one source of advantage: social class. This mechanism would partially explain why the achievement gap between ethnicities - especially the gap between blacks and whites - increases as one moves up the social structure: because upper-class whites and Asians add privilege while upper-class blacks and Hispanics see their initial advantage fade when it crashes into ethnic disadvantage.

It is important to note that this research does not tackle whether there is conscious discrimination by teachers, school administrators or public institutions. Instead, it aims to disclose how the historical privilege associated with ethnicity affects the educational opportunities of upper-class children. It supports the view, however, that by neglecting to notice the different challenges that upper-class children face on account of their ethnicity, teachers, school administrators, and scholars may be overlooking some of the mechanisms driving Ethnic Inequalities of Educational Opportunities (EIEO).

3.2 The puzzle

There are multiple factors driving EIEO in the US. First of all, ethnic minorities tend to have worse living conditions than American-whites which hamper children's cognitive development and, in turn, translates into lower academic achievement. Nonetheless, upper-class ethnic minorities have better living conditions than their lower class counterparts, yet, this does not mean that they equal the life conditions of upper-class white Americans. This may be because, throughout US history, they have been subject to restrictions and limitations due to their ethnicity. These unequal upper-class lives may result in different performance in school, due dissimilar access to high-quality services such as kindergarten, schools, and public spaces such as parks or libraries. Consequently,

the achievement gap in earlier stages of education may be at the core of the enrolment gap in higher education. For this reason, instead of focusing on higher education attainment, this chapter focuses on the achievement gap in reading and mathematic scores in the tests performed by the *Educational Longitudinal Study of 2002*, hence, during middle school years. Consequently, the main dependent variable is the quartile of score in which children are performing in mathematics and reading.

The research questions to be answered in this chapter, hence, can be summarized as follows:

1. Are upper-class children from ethnic minorities more exposed to deprived environments than white upper-class children?
2. Are there ethnic differences on the likelihood of being a poor performer in mathematics and/or reading among upper-class children?
3. Are there ethnic differences on the likelihood of being a high performer in mathematics and/or reading among upper-class children?

In sum, the main question that articulates the chapter can be formulated as follows: does being upper-class entitle the same degree of advantage in education for children of different ethnicities? To answer these questions I use data from the Educational Longitudinal Study of 2002. Unfortunately, the performance variables with regard to mathematics and reading are not available in all waves, therefore, the longitudinal analysis is highly constrained. Besides, because living conditions highly differ by ethnicity - due to *de facto* racial segregation - descriptive statistics regarding the environment in which upper-class children live will be introduced. By doing so, I aim to illustrate the heterogeneity of life conditions within upper-class households in the US.

3.3 Theoretical background

3.3.1 Capital and educational performance

Disparities in *financial resources* are probably the most acknowledged cause of the achievement gap between ethnic groups (Massey, Charles, Lundy, & Fischer, 2011). As in the working-class case, some researchers tend to point to the lack of economic capital as the main source of the educational under-performance of ethnic minorities. This is because white parents tend to earn more than ethnic minority parents (see figure 3.11) and they can use this money to provide their children with better neighborhoods, schools, health care, childcare, etc. Yet, even when controlling by household income, ethnicity is still a significant factor influencing educational achievement (Reardon, Baker, & Klasik, 2012).

Even if parents can afford some services, they must know that the service is required in order to invest in it. In this vein, parents with high levels of *human capital* are better able to help their offspring navigate through the education system, mainly because they have gone through the highest stages of education themselves. In brief, they know how the system works and how to maneuver within its boundaries. On average, African-American and Hispanic parents tend to have lower educational credentials than Asians and whites; therefore, they have less knowledge of the system. Still, highly educated African-American parents seem to have difficulties in translating

their knowledge into effective advantage for their children (Duncan, 1968; Massey et al., 2011). This might be because schools tend to respond to and reproduce the culture of the majority (Bourdieu & Passeron, 1990), and whites are the majority in the US. The legacy of historic ethnic discrimination may still be substantial and affect the ways in which parental human capital is translated into effective advantage.

Cultural capital has no intrinsic value, its utility emerges only when it is used to gather socially-valued abilities and skills, in other words, when is translated into status. Hence, culture is not a reflection of inequality but works to produce it (S. R. Khan, 2010b). Through the display of cultural capital, privilege is naturalized and embodied, camouflaging the way it operates (S. R. Khan, 2010a, 2010b). Children from the upper social strata are native speakers of privileged languages. Through experiences and exposure to privileged environments, upper-class children learn to make their advantaged social position seem natural (S. R. Khan, 2010b). As a consequence, inequality is perceived not as the output of upper social class practices of exclusion and inclusion, but as the result of the lack of skills and talents of the less advantaged social groups (S. R. Khan, 2010b). In this regard, the upper social classes engage in the discourse of meritocracy and hard work to justify their privileged social position (S. R. Khan, 2010b). According to them, if the lower social classes do not make it to the top, it must be because they lack "what it takes" (Gaztambide-Fernández, 2011; S. R. Khan, 2010b). Similarly, racial identity shapes the way in which cultural capital is constructed and translated into advantage (S. R. Khan, 2010b). As in the case of the upper social class, privileged ethnicities might engage in discourse about meritocracy to justify their advantage. In so doing, discrimination is perceived as a feature of the past. Equality of rights has been translated into the perception of equal opportunities; consequently, historically discriminated ethnicities are now perceived as the drivers of their own fate. In this manner, the comparatively lower educational achievement of African Americans and Hispanics - especially in the case of the upper social class children - may be perceived as the result of their own lack of abilities and cultural practices, rather than the product of structural discrimination and historical processes.

Social capital is another source of (in)equalities. To gather privileged social capital, one must have access to privileged social groups and institutions. This access might be inherited - from parents to children - or gained through social mobility. The knowledge, social contacts, and expectations of the social group help and pressure children to succeed academically. Because the US is a highly segregated country - both racially and economically - contact between ethnic groups and social strata is scarce (Massey et al., 2011; Pattillo-McCoy, 1999). The social networks are affected by the patterns of residential segregation, and children of different social and ethnic backgrounds have diverse social ties, leading to diverse social capital.

3.3.2 Peer group effects and the threat of being *"raceless"*

The lack of adequate capital is not the only theory debated regarding the under¨performance of ethnic minorities. Peer group theories assert that academic aspirations and performance are shaped by the social pressure derived from the peer group (Coleman & Johnstone, 1963; Massey et al., 2011). Concurrently, peer group effects can be either *contextual* or *proximate* (Hallinan, 1981). The former derives from the socioeconomic composition of the peer group; the latter implies that proximity is a necessary yet not sufficient condition for interpersonal interest and, ultimately,

influence (Massey et al., 2011).

Contextual peer effects are a consequence of both the *reference group* and *interpersonal* processes (Massey et al., 2011). In this vein, the peer group tends to develop group norms, offer concrete role models, and provide a gauge for social comparison (Festinger, 1954; Kelley, 1967; Massey et al., 2011; Merton & Kitt, 1952). Furthermore, children have in their peers a reference group with whom to compare. On the other hand, peer values are acquired and propagated interpersonally, through interactions between individuals within the social environment (Massey et al., 2011).

However, the main issue with peer studies is that people tend to choose friends with whom they have similar interests and characteristics, producing self-selection mechanisms and, therefore, biasing empirical results (Massey et al., 2011). For example, adolescent athletes tend to hang out with their equals, and so do academically-oriented children. Hence, it is not clear whether they are "good" students because they have academically-oriented friends or vice versa. Some studies that have attempted to control by selection effects found that Asians tend to succeed, partly, because of their academically-oriented friends (Kao, 2001; Steinberg, Brown, & Dornbusch, 1997), while African Americans tend to be more susceptible to their peers' opinions and behavior than other ethnic groups (Kao, 2001). At the same time, the offspring of highly-educated African Americans live in much more socioeconomically heterogeneous neighborhoods than the their white counterparts (Pattillo-McCoy, 1999). As a result, they are more exposed to low-income peers, both in school and in after-school activities, which implies a different pool of individuals from which they can choose their friends.

Ethnic identities are also partially constructed in opposition to the majority culture (Massey et al., 2011; Ogbu & Simons, 1998). One of the most popular theories - together with the inadequate capital explanation - regarding the achievement gap between African Americans and whites is Ogbu's Cultural Ecological Theory (CET) (Ogbu, 1981, 2008; Ogbu & Simons, 1998). This theory maintains that African Americans might recognize some traits as part of the "white culture" and, as such, a threat to their ethnic identity. Thus, participating in the dominant culture - being academically oriented, for example - may be understood as a betrayal of their own ethnicity, and the peer group might exert pressure to reinforce the traits perceived as inherent to their ethnic culture - for example, detachment from educational institutions. Empirical research on oppositional culture theory, however, does not seem to agree on whether such mechanisms exist or not. Some scholars have found evidence in support of the *raceless* threat theory (Solomon, 1992), while others found rather complicated mechanisms of rejection/acceptance of the minority/majority culture (Carter, 2000; O'Connor, 1997).

Little attention has been paid, however, to the intersection between social class and ethnicity. The construction of individual identities lies on multiple pillars. Gender, social strata, ethnicity, and religion, for example, are solid pillars and all of them intersect to create an individual's identity. Since most research focuses on low-income individuals, we still do not know how ethnicity affects the upper social class educational opportunities in the US.

3.3.3 Segregation might mean causation

3.3.3.1 The milky way versus the black belts

African Americans and other ethnic minorities have not always been segregated from whites in the US. Before 1900, blacks shared neighborhoods with the whites whom they served. They were discriminated against and exploited, yet, they were part of the same community (Massey, 1993). The First World War, and the subsequent interruption of European immigration,[1] boosted the northward *Great Migration* of southern blacks and their urbanization in northern cities (Massey, 1993; Pattillo-McCoy, 1999). As a response to the African-American arrival, whites fled from the racially-integrated communities, increasing racial segregation in urban regions.

The increasing opportunities of the post Civil Rights Act era were translated into urban mobility. Yet, residential discrimination by ethnicity was a common practice and banks and real estate practices confined blacks to specific areas: the black belts surrounding urban centers. Those areas were segregated by social class, but they were near each other. In other words, blacks tried to flee from the hierarchically-integrated black ghettoes, but they could not go very far (Pattillo-McCoy, 1999). Simultaneously, the white neighborhoods still reserved their right to admission, in this manner, the *milky way* suburbs were ensured as opposed to the *black belt* surrounding the core of urban cities.

Despite the fact that segregation between ethnic communities remains extensive, isolation appears to have been moderated in the last decades. Black-white segregation has been the most salient but also the element that has lost its prevalence to a larger extent. Hispanics and Asians are more integrated with whites, yet the mixture has improved less than in the black-white case (Goyette, 2014). In 1980 the black-white dissimilarity score[2] was 0.73, decreasing to 0.59 in 2010 (Goyette, 2014). In the Hispanic-white case, it decreased just 0.02 points (from 0.50 in 1980 to 0.48 in 2010) and it remained the same for Asian-whites (0.41) (Goyette, 2014).

These segregation patterns can be understood as a consequence of at least the two following processes: structural constraints to housing choices and individual preferences (Goyette, 2014). Residential segregation is largely a consequence of historically discriminatory practices in the housing market. Ethnic minorities (especially blacks) have been confined to particular areas of the city by the unequal treatment of real estate and banks, favoring whites with advantageous mortgage rates while penalizing blacks (Goering & Wienk, 1996; Goyette, 2014; Munnell et al., 1996). At the same time, the income gap between ethnic groups favors whites, who can afford neighborhoods with higher quality services than blacks, Hispanics, and Asians (Clark, 2007; Goyette, 2014). Thus, the white upper class families tend to share spaces with similar social strata and ethnicities, and enjoy the perks of geographically concentrated wealth, such as better schools (Goyette, 2014). Fortunately, changes in social attitudes, the increase in the economic status of ethnic minorities, and the *Fair Housing Act* have contributed to the decline of discriminatory practices. However, residential segregation between ethnic groups is still high in the US, which

[1] Between 1880 and 1920 millions of eastern and southern Europeans arrived in the US. After 1920 Mexicans substituted them as the main migrant group (Massey, 1993)

[2] The dissimilarity score points out the proportion of population that would have to move to reach the equal proportion of ethnic groups. In this case, 64% of blacks or whites would have to move for all neighborhoods in a metropolitan area (Goyette, 2014).

leads to the second explanatory factor of residential segregation: racial residential preferences (Goyette, 2014).

In-group preference theory (Clark, 1992) states that individuals wish to share their neighborhood with those with whom they share a similar cultural background (Goyette, 2014). Using ethnicity as a proxy for common culture, whites tend to prefer to live in majority-white neighborhoods, and blacks tend to be segregated into specific areas, as are Asians and Hispanics. However, most research points to out-group aversion as a stronger factor in residential segregation (Bobo & Zubrinsky, 1996). In other words, prejudices and the fear of animosity make ethnic groups avoid each other. Yet, not all the ethnic groups shun each other to a similar degree (Goyette, 2014). Black-white relations are the most difficult ones (Goyette, 2014). Blemished with the shadow of slavery, *de jure* racial segregation, and institutionalized discrimination, blacks and whites tend to have stronger feelings about each other than, for example, regarding Hispanics or Asians. Perceived as more divergent and holding stronger prejudices against one another, it is not surprising that their dissimilarity score is the highest. At the same time, cities in the US are not only segregated by ethnicity but also by social strata. However, ethnic groups tend to have different patterns of segregation within their community. Previous research has found a higher level of integration between classes within the African American community than, for example, among whites (Massey et al., 2011; Pattillo-McCoy, 1999).

3.3.3.2 School segregation

Racial segregation - both *de jure* and *de facto* - between schools has been an outstanding characteristic of the US education system. In 1954, the *Brown v. Board of Education* case did strike the basis of *de jure* segregation declaring it unconstitutional (Goyette, 2014; Reardon, Grewal, Kalogrides, & Greenberg, 2012). Still, up until the Civil Rights Act the Federal Government did not have much room to develop policies to reinforce integration. In the post Civil Rights Act era, however, schools and districts were compelled by the courts to ensure racial desegregation of schools. The policies seemed to partly work and segregation declined between the 1970s and the 1980s, yet, it was still substantial in the system (Reardon, Grewal, et al., 2012). The courts' supervision was meant to be temporary and in the early 1990s the Supreme Court started to dismiss districts from court supervision. The dismissal of court surveillance over districts appears to have resulted in the resegregation of schools (Reardon, Grewal, et al., 2012).

School catchment areas are based on area of residence, feeding the schools of their neighborhood. Residential segregation is therefore often translated into school segregation. What is more, segregation in public schools is even more persistent than in neighborhoods (Goyette, 2014). This is because, even if ethnic groups share neighborhoods, the broad school choice of the US might have a perverse effect: once neighborhoods/schools start to be more racially diversified, whites appear to leave and flee to the suburbs, producing the so-called *white flight effect*. These suburban communities tend to be wealthier and, therefore, have more capital at their disposal (Goyette, 2014). Capital that can be invested in their schools. In addition, by controlling zoning, these communities can restrict the construction of unwanted buildings - such as multifamily residences - and restrict housing choices (Goyette, 2014). In this manner, they can block the access to undesirable low-income families but also ethnicities. Briefly, they reserve the right to refuse

admission (Goyette, 2014).

Altogether, these segregation patterns lead to different neighborhood and school environments, shaping the formation of social and cultural capital. Children from ethnically-discriminated minorities are much more exposed to the perils of concentrated poverty than whites, even if they are part of the upper social class. Their peer groups are different, their childhoods are diverse, and their learning process and educational opportunities may be hampered by the colliding forces of class privilege and ethnic disadvantage.

3.4 Methodology

3.4.1 Educational Longitudinal Panel of 2002

This chapter is built upon the *Educational Longitudinal Study of 2002* (ELS:2002). It is a nationally representative, longitudinal study of 2002 10th graders. The students are followed throughout their secondary and post-secondary years. It surveys students, but also their parents, mathematics and English teachers, and school administrators. In addition, students are assessed in mathematics (10th and 12th grade) and English (10th grade). For the analysis, Parental Human Capital (PHC) has been the main indicator of social class. Thus, highly educated parents have been selected as members of the upper social class.

The longitudinal study focuses on the trajectories from the beginning of high school into post-secondary education, the labor market, and beyond. The base year survey was conducted in 2002, the first follow-up in 2004, the second follow-up in 2006, and the third follow-up in 2012. Yet, some variables are not available for all the waves (for example, assessment in English or parental occupation). When possible, a longitudinal analysis has been conducted. The analysis is built on the first two waves of the ELS:02. This is because, the variables regarding educational performance are available for either both or just one of these waves.

3.5 Measures of social class and achievement

3.5.1 Ethnic background

One of the main variables in this analysis is ethnicity (Table 3.1.). In this regard, due to sample constraints, two of the six ethnic groups surveyed in ELS:02 have been omitted from the analysis: Native Americans and Mixed-Race children.[3] Hence, four ethnic groups have been selected for the analysis: Asians, blacks, Hispanics, and whites.

3.5.2 Parental Human Capital

The parental educational level[4] has been recorded as a variable that groups parents into three levels of parental human capital: low, medium, and high. Parents are considered to have *low parental human capital* when they have high school or lower credentials. In other words *less than* or *just* compulsory education. Parents are considered to have *medium levels* of human capital

[3] Although the sample might be representative of their population, the sample size - once broken down by parental education - was very small, and the results would be biased because of this.

[4] The highest level of education reached by either of the student's parents.

	Categories	Frequency	Percentage
Original Variable			
	Survey respondent legitimate skip/NA	305	1.88
	Nonrespondent	648	4.00
	American Indian/ Alaska Native, non-Hispanic	130	0.80
	Asian, Hawaii / Pac. islander, non-Hispanic	1460	9.01
	Black or African American, non-Hispanic	2020	12.47
	Hispanic, no race specified	996	6.15
	Hispanic, race specified	1221	7.54
	More than one race, non-Hispanic	735	4.54
	White, non-Hispanic	1221	7.54
Recoded variable			
	Asian	1460	9.01
	African American / Black	2020	12.47
	Hispanic	2217	13.67
	White	8682	53.60

Table 3.1: Ethnicity variable

when they have completed community college,[5] and high levels when they have completed four years of university or postgraduates studies. ELS:02 also provides us with information about incomplete educational levels, such as community college (2-year degrees) or four-year colleges. Still, since parents failed to complete their studies, they are grouped in accordance to the fulfilled educational credentials. Hence, parents who failed in community college are considered to have low human capital. The logic behind this classification is that parents who did enroll in higher education, but did not finish it, do not possess the knowledge and experience required to succeed in the system, nor the labor market rewards that such credentials convey. Therefore, they cannot pass this knowledge on to their offspring.

As table 3.2 displays, Asian and white parents tend to have higher parental human capital than blacks and Hispanic parents. Still, the number of parents with a higher education is substantial among underprivileged ethnic groups. Therefore, there is no reason to assume that the results for black and Hispanic children with highly-educated parents would not be representative of the subgroup population.

	Low	Medium	High
White (%)	43.15	10.98	45.88
N	3.746	953	3983
Asian (%)	42.47	6.92	50.62
N	620	101	739
Black (%)	55.29	11.98	32.82
N	1.115	242	663
Hispanic (%)	65.76	9.29	24.94
N	1.458	206	553

Table 3.2: Parental Human Capital by ethnicity

[5] Equivalent to two years of higher education.

3.5.3 Household income

Because educational credentials appear to be unequally rewarded in the labor market for different ethnicities, household income has been selected in order to unravel whether inequalities of opportunities are driven by disparities of economic capital among highly-educated parents.

The original variable refers to the household income of 2001 (the only year in which ELS:02 provides data about household income), and it contains 13 categories in which the respondents (parents) can situate themselves. This original variable has been recoded to have just 5 categories, in order to do the analysis much more simple (table 3.3). Children are considered to live in an upper-class family when they live in a household with an income of over 75,000$. Assuming that highly-educated parents have rather stable earnings, the household income of 2001 has been imputed to the household in the second wave in order to be able to calculate the longitudinal regression. Nonetheless, it is true that income may be more variable among ethnic minorities, yet, it is also true that being highly educated should protect them from long unemployment periods and a significant decrease in income levels.

Categories	Frequency	Percentage
None	80	0.49
$1,000 or less	178	1.10
$1,001-$5,000	305	1.88
$5,001-$10,000	351	2.17
$10,001-$15,000	699	4.32
$15,001-$20,000	782	4.83
$20,001-$25,000	1000	6.17
$25,001-$35,000	1894	11.69
$35,001-$50,000	3022	18.66
$50,001-$75,000	3316	20.47
$75,001-$100,000	2178	13.45
$100,001-$200,000	1810	11.17
$200,001 or more	582	3.59
Recoded variable		
$25,000 or less	3395	20.96
$25,001-$50,000	4916	30.35
$50,001-$75,000	3316	20.47
$75,001-$100,000	2178	13.45
$ More than $100,000	2392	14.77

Table 3.3: Household income variable

3.5.4 School and neighbourhood quality

There are two main indicators used to assess the overall school quality. One is the *school safety index*, and the other is the school academic climate (summary statistics available in table 3.4). ELS:02 provides two measures regarding the school safety index, one according to the principal's perception and another according to the students' perception. For the analysis, the latter has been chosen. The logic behind the selection is that the subjects of analysis are children and their families. Therefore, the perception of children will be the one that affects their academic performance and behavior, regardless of the principal's discernment. The variable is a scale of the

student's perception in 2002, regarding the school safety level. It was created through a principal factor analysis, and weighted. It is standardized to a mean of 0 and a standard deviation of 1, with a coefficient of reliability (alpha) of 0.64. Yet, the quality of the school cannot be assessed only by the safety index, since it is a rather basic condition for a school. The *school academic climate* has also been selected as an indicator of the overall quality of the school. In this vein, the variable is a scale of the school administrator's perception of the school's academic climate. As the value increases, so does the perception of the school as more academically-oriented. The variable is provided by ELS:02, and it was originally created through a principal factor analysis, and weighted. To distinguish administrator-based scales from student-based scales, this variable was not standardized. The coefficient of reliability (alpha) for the scale is 0.86.

Variable	Index	Observations	Mean	Std. Deviation	Min.	Max.
SCSAF2	School safety index by student's perception	14.084	0.135	1.007	-3.043	1.56
teaqua	Student's perception of teacher-student relationship	13.975	0.066	1.005	-3.724	2.349
ACCLIM	Academic climate of school according to school administrator	13.169	0.008	0.160	-0.63	0.266

Table 3.4: Summary statistics of the school quality indicators

One of the main indications for unraveling the concentration of low-income students in an educational institution is the share of the student body in the free lunch/reduced price program. A low proportion of free-lunch benefit students implies low levels of poor students. Hence, as the share of children subject to the free-lunch program increases, so does the accumulation of poverty in the school. The original variable has been recoded into 4 categories, to disentangle whether children from diverse ethnic backgrounds attend schools with different levels of poverty concentration. I assume that a school has a high level of low-income population when the proportion of students in the free-lunch/reduced-price program exceeds 20% of the student body, and a low level of poor students when the share is lower than 6%.

To assess the quality of the neighborhood of residence, three categorical variables (table 3.5) from the parents' base year questionnaire have been chosen: the level of crime in the neighborhood; how safe the neighborhood is; and how involved parents feel in the neighborhood/community.

Questions and responses	%	Observations
Do you feel as though you are part of your neighborhood or community, or do you think of it more as a just a place to live?		
Feel part of the neighborhood /community	75.93	9336
Just a place to live	24.07	2959
How would you describe the level of crime in your neighborhood? Would you say your neighborhood has a...		
High level of crime	1.83	225
Moderate level of crime	9.72	1196
Low level of crime	88.46	10884
How safe is your neighborhood?		
Very safe	67.72	8344
Somewhat safe	28.66	3553
Somewhat unsafe	2.93	361
Very unsafe	0.69	85

Table 3.5: Neighborhood safety and satisfaction variables

3.5.5 Generational status

Immigration status is a crucial factor that must be taken into account in the analysis conducted. In this regard, ethnic minorities are more likely to have an immigrant background, which might affect their educational achievement. Hence, a child has been considered as "native" when both he/she and the mother are US natives; a second-generation immigrant when (s)he has been born

in the US but not the mother; and a first-generation immigrant when both mother and child are born outside the US. It is important to note that these are the categories provided by ELS:02 and information about the father is not included in the generation status variable provided.

3.5.6 Achievement

The standardized score composite on mathematics and reading (only available for wave 1) has been selected for the preliminary analysis on how each ethnic group performs at a given point in time. This variable is a composite provided by ELS:02, and it divides the weighted population achievement distributions into four equal groups, based on math and reading composite scores. The first quartile corresponds to the lowest performance level, while the fourth quartile corresponds to the highest performance level.

Unfortunately, the standardized score composite on mathematics and reading is only available for the first wave. In order to analyze transitions on performance, and unravel whether parents from privileged social backgrounds compensate for initial failures, the mathematics quartile of performance have been used as dependent variable (available for the first two waves (2002-04)). It divides the weighted achievement distributions into four equal groups, based on the former variable. The first quartile corresponds to the lowest-achieving population, while the fourth quartile corresponds to the highest achievers. The quartile of performance has been used to point out the transition probabilities for different ethnicities and social groups.

3.6 Results

3.6.1 What social class does not provide

3.6.1.1 Home sweet home

Ethnic residential segregation in the US is persistently salient decades after the passage of the Fair Housing Act (1968) (Massey et al., 2011; Pattillo-McCoy, 1999). Yet, segregation means different things for different ethnicities. While whites tend to segregate themselves in largely economically homogeneous neighborhoods, African Americans tend to live in particularly economically heterogeneous communities (Pattillo-McCoy, 1999). Thus, middle- and upper-class African Americans live near their poorer counterparts, while whites, Asians, and Hispanics tend to "flee" from their low-income and low-educated counterparts. These different patterns of segregation mean that children from privileged social strata have different levels of exposure to concentrated poverty depending on their ethnicity. Because more African American upper social class children live in poorer neighborhoods than other ethnicities, they have lower quality services - like schools - and higher levels of exposure to the perils of concentrated poverty (Massey et al., 2011; Pattillo-McCoy, 1999). This exposure might affect the chances of the social reproduction of upper-class African Americans.

At the same time, ethnic minorities tend to have lower incomes than whites, even when they have professional jobs (Bobo & Zubrinsky, 1996). Hence, the living conditions of their neighborhood might be worse, producing a mismatch between their position on the social class hierarchy and the quality of their home environment. Indeed, the analysis of ELS:02 points out that highly-educated

minorities feel less safe than their white counterparts in their neighborhoods. Whereas 83% of highly-educated whites and 70% of Asians do feel very safe at their neighborhood, only 57% of blacks and 67% of Hispanics do. As a way of illustration, low-educated whites feel *very safe* in a higher proportion (69%) than highly-educated blacks (57%).

Safety feelings are related to crime levels. Low-educated parents appear to feel less safe and, indeed, they report higher crime levels in their area than their higher-educated counterparts, regardless of their ethnic background. There are, however, substantial ethnic differences among the highly educated subgroup. Over 96% of whites report living in a low crime area, whereas just 83% of blacks do it - a 13% gap.

3.6.1.2 School of attendance and peer-group exposure

The wide freedom of school choice in the US makes the selection a hard and important decision to make for parents. Because parents have different expectations for their children, the understanding of what is a good/bad school is biased by social class. At the same time, the affordability of private schools may play a role in the choice of school,[6] leading to a new source of unequal school choices (Goyette, 2014).

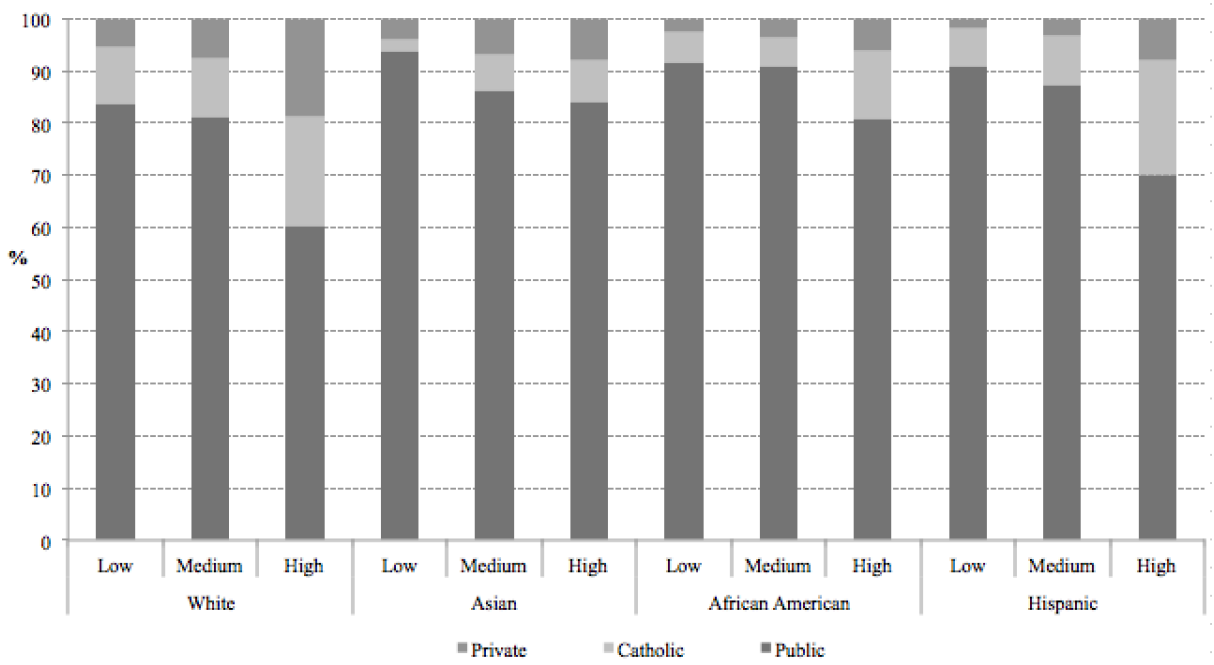

Figure 3.1: Type of school by ethnicity and parental human capital. United States, 2002.

It is apparent from figure 3.1 that as Parental Human Capital (PHC) increases, the proportion of children enrolled in public schools decreases. If we turn our attention to the offspring of highly-educated parents, we can see that there are noteworthy differences between ethnicities. Asians seem to be more integrated in public schools, and few of them choose private schools, either Catholic or non-religious. Although the majority of blacks chose public schools too, 13% of them

[6] If parents think about private education as a real option, their prejudice against public schools might be stronger. This is because parents would not weigh up all the options within the public sector, nor would they look for information on public schools with the same dedication as parents for whom private education is not an option.

choose Catholic schools, and 6 % private non-religious institutions. Highly educated whites are the least committed to public education, and almost half of them avoid the public system in order to enroll either in Catholic (21%) or non-religious private education (19%). Hispanics choose to enroll in Catholic schools (22%) to a slightly higher proportion than their white counterparts, yet the enrollment in non-religious private education is quite low (8%).

	Overall	Between	Within
White			
0 to 5	54	60	90
6 to 10	12	17	67
11 to 20	13	20	69
More than 30	20	25	83
Asian			
0 to 5	43	50	91
6 to 10	14	21	67
11 to 20	14	21	66
More than 30	29	33	87
Hispanic			
0 to 5	50	53	91
6 to 10	7	11	74
11 to 20	11	17	68
More than 30	31	35	91
Black			
0 to 5	30	34	83
6 to 10	10	14	74
11 to 20	14	21	70
More than 30	46	53	89

Table 3.6: Proportion of the student body in school in the free lunch-reduced price program by ethnicity. United States 2002-200404.

School catchment areas are linked to the district of residence and, therefore, residential and school segregation often come together. The black community is much more economically integrated than whites, Asians, and Hispanics, and so I therefore expect a higher share of poor students in the schools of the upper class blacks. One of the main indicators of poverty concentration in educational institutions is the share of pupils in school in the free-lunch/reduced-price program.[7] Table 3.6 displays the proportion of students in school in the aforementioned program by ethnic background (only for children with highly-educated parents). The *within* column is a measure of stability that presents the proportion of time that an individual remains in a category (in this case, it refers to the first two waves of ELS:02, hence, the period of 2002-2004. This column, therefore, measures whether a child changed from one type of school to another in the time span of 2 years). From the data we can see that individuals appear to be rather fixed and do not change much from one category to another. This means that children do not transfer much from one school to another or that, if they do, the schools share similar socioeconomic features. The values in which children are stable, however, are diverse. Overall, in 46% of the data a black child with highly-educated parents is enrolled in a school with over 20% of its student body in the free-lunch/reduced price

[7] As the proportion of students in the free-lunch/reduced-price program increases, the wealth of the school community is assumed to diminish.

program. White children appear to enroll in schools with a lower proportion of students in the aforementioned program, followed by Asians, and Hispanics. Hence, it is apparent from the data that the offspring of highly-educated blacks attend more economically heterogeneous schools than their white, Asian, and Hispanic counterparts.

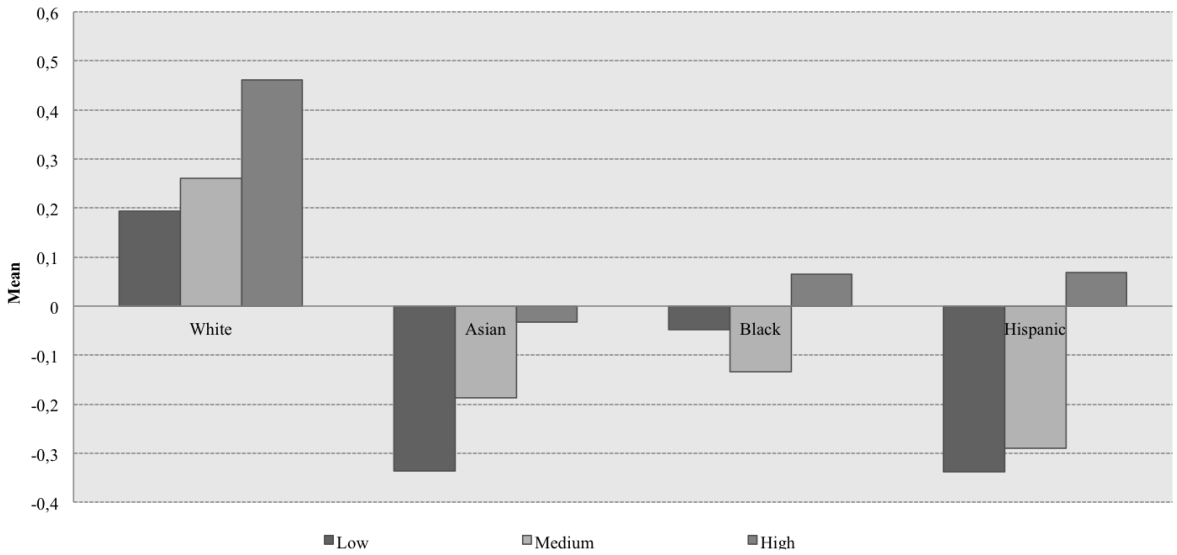

Figure 3.2: Students' perception of the school safety level by ethnic background and parental human capital. United States, 2002.

All in all, black children with highly-educated parents seem to be exposed to higher levels of poor peers at school than their white, Asian, and Hispanic counterparts. The exposure to higher levels of poverty might make them more vulnerable to the perils of poverty. Indeed, non-white children report lower levels of school safety (Figure 3.2). More precisely, whereas whites report always positive levels of safety in their schools, Asian children always report negative levels - regardless of PHC. Black children with highly-educated parents have positive levels of safety in school, however, it is much lower than whites. At the same time, Hispanics with low and medium PHC appear to have much lower levels of safety in their school than blacks. Still, Hispanic children with highly-educated parents perceive their schools as safe compared to their black counterparts.

As figure 3.3 displays, white children with highly educated parents are exposed to higher levels of academic climate than any other ethnicity with a similar level of PHC. Asian children with low and medium-educated parents, in contrast, have negative levels of academic climate at school. Yet, those with highly-educated parents seem to catch up with their white privileged counterparts. None of the black community educational subgroups reach positive levels of academic climate at school. And although the offspring of highly-educated Hispanics seem to reach positive levels of academic exposure at school, those with low and medium PHC are exposed to the lowest levels of academic climate.

3.6.1.3 Social Capital

Different schools and neighborhoods involve different peer groups and, therefore, residential and school segregation must have a strong effect on the development of children's social ties.

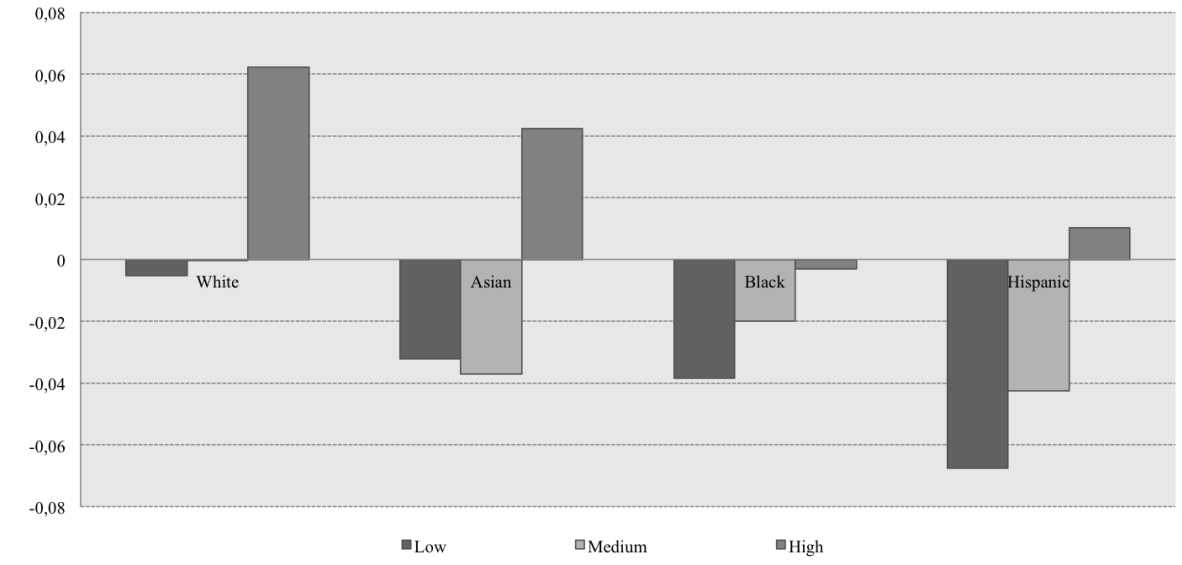

Figure 3.3: School academic climate by ethnic background and parental human capital. United States, 2002.

Irrespective of ethnic background, as PHC increases so does the ethnic diversity of a child's peer group (figure 3.4). Highly-educated parents, therefore, seem to produce ethnically integrated offspring. Still, white children appear to be the most segregated ethnic group, followed by blacks (figure 3.4). Asians, in contrast, seem to be the least segregated ethnicity and more than one third of them have at least 3 friends of a different ethnic background. Finally, Hispanics appear to be less segregated than whites, but not as integrated as Asians.

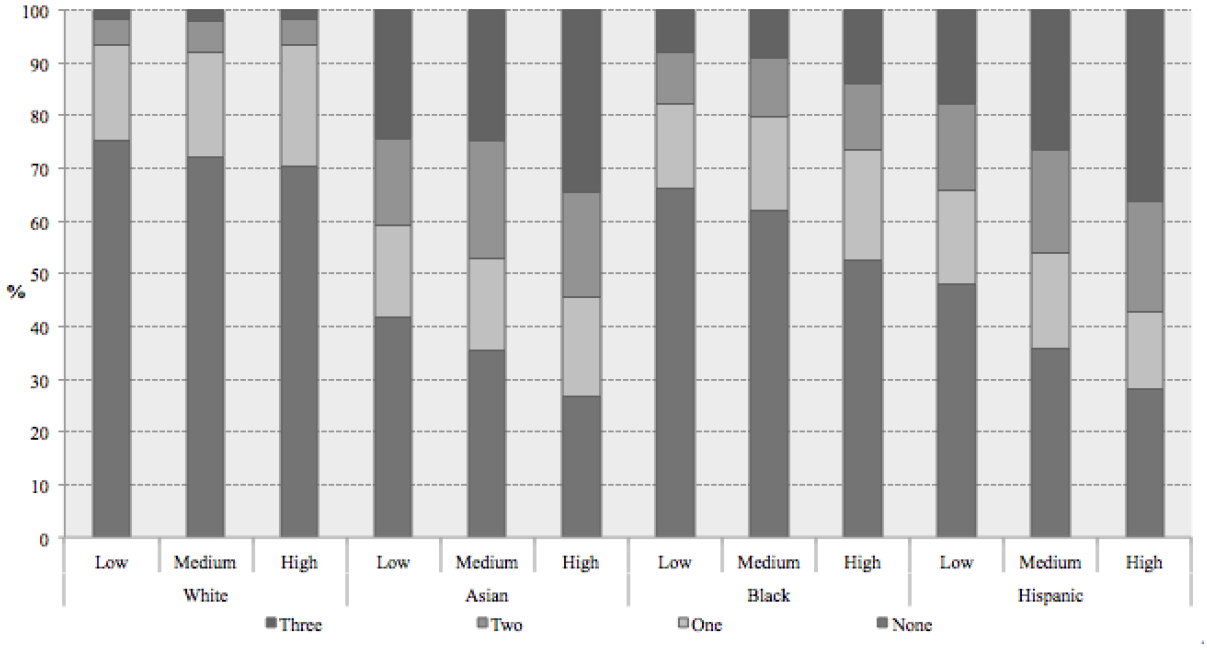

Figure 3.4: Number of friends with a different ethnic background that the one's, by respondent ethnicity and parental human capital. United States, 2002.

So far, the analysis conducted in this section suggests that upper social class children from underprivileged ethnicities attend more diverse schools than their white and Asian counterparts. More precisely, there are substantial differences regarding school quality, ethnic isolation, and exposure to poverty concentration. Blacks and whites are the most isolated ethnicities; however, their isolation occurs within different living conditions, which might influence the educational opportunities of the upper-class children.

3.6.2 Hard workers or biased perceptions?

Research evidence suggests that the upper social class engages in discourse about hard work and talent to justify its educational achievement and privileged social position (S. R. Khan, 2010b). In doing so, they explain their success not by the practices of in/exclusion from the privileged group, but by the insufficient effort made by the lower social classes (S. R. Khan, 2010b). Similarly, educational professionals may hold beliefs about meritocracy and also perceive the comparative lower educational performance of underprivileged ethnic minorities as a sign of insufficient endeavor. In the end, these children are the offspring of highly-educated parents, therefore, if they do not excel it may be because they do not work hard enough to get good grades. In this manner, rather than acknowledging the differences in life conditions and opportunities so far presented, they would overlook them, thus producing a "blame the victim" scenario.

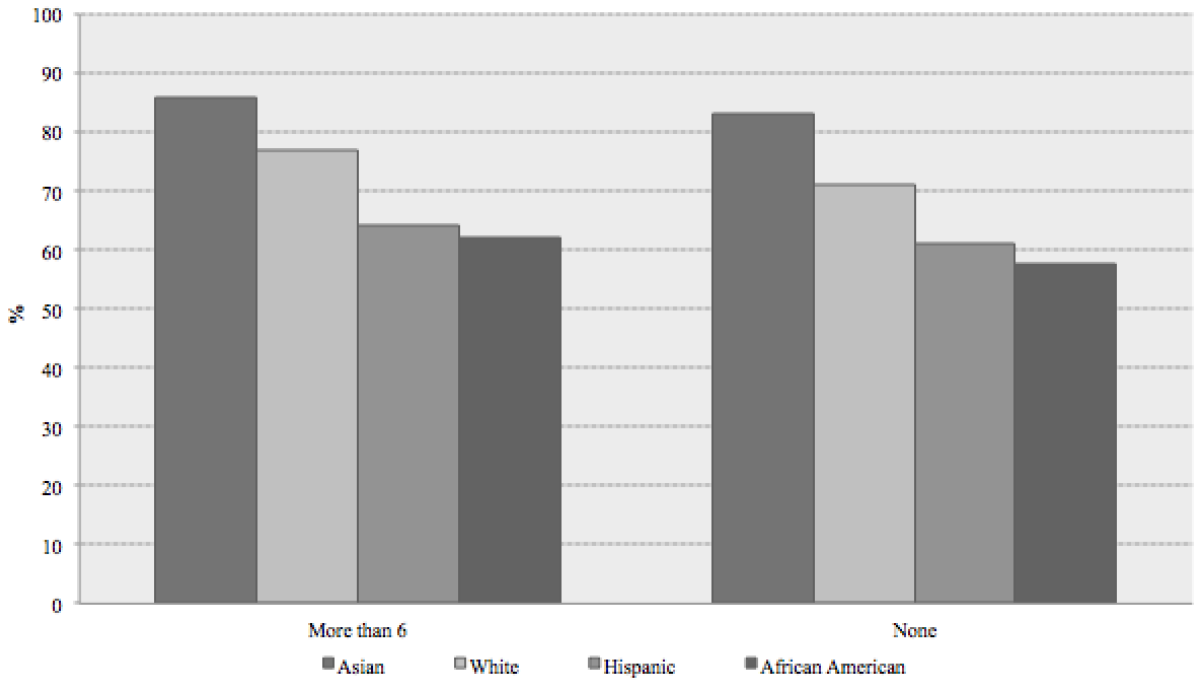

Figure 3.5: Students perceived as "working hard for good grades" by their math teacher, and hours per week spent on mathematics homework. United States, 2002.

A simple descriptive analysis (figure 3.6) appears to point to unequal teacher perceptions by ethnicity. Asian and white children with highly-educated parents seem to be perceived as hard workers in a higher proportion that their black and Hispanic counterparts, even when they do not spend any hours doing their math homework (neither *at* nor *outside* school). In fact, the hours spent

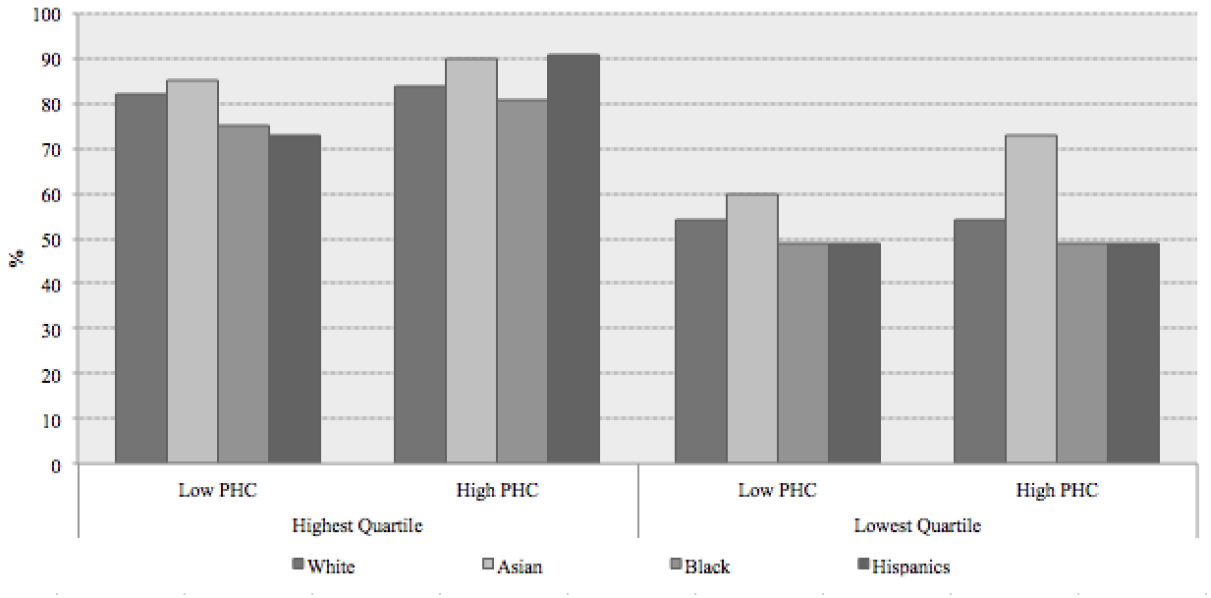

Figure 3.6: Students perceived as "working hard for good grades" by their math teacher, and quartile of mathematic performance. Children with low/high parental human capital. United States, 2002.

doing homework do not seem to influence the teacher's perception. The underlying mechanism driving this unequal perception could be the achievement gap between ethnic groups. In other words, instead of acknowledging the dissimilar opportunities that children have because of their ethnicity, teachers might engage in a meritocracy discourse to justify the performance gap between ethnicities. Thus, since children from black and Hispanic ethnicities tend to underperform next to their Asian and white counterparts (even when they have highly-educated parents), the share of "hard workers" should be lower among them.

If instead of number of hours spent doing homework we take achievement in mathematics as an explanatory factor (figure 3.7) we can see that the differences between ethnicities are much lower and even disappear in some cases. Among top achievers with high levels of PHC, Asians and Hispanics appear to be the ones perceived as the hardest workers, although the gap with respect to whites and blacks is small. If we turn our attention to top achievers with low PHC we can see that the pattern changes. In this case, Asians and whites seem to be the ones perceived as the hardest workers, while Hispanics fall to the bottom. Nevertheless, most top achievers are seen as hard workers while the opposite happens with low achievers. Among bottom performers, Asians are - again - recognized as the hardest workers, followed by whites. In contrast, blacks and Hispanics pair at the lowest position. The pattern repeats in both PHC groups, but Asians with high PHC appear to be perceived as hard workers in much higher proportions than their counterparts with lower PHC. The gap between PHC levels is nonexistent for blacks, Hispanics and whites.

Briefly, these results suggest that perceptions of "hard work" are not driven by effort but instead by performance, without consideration for real effort. In this manner, teachers appear to hold strong meritocracy beliefs and appear to make children accountable for their performance. This judgment overlooks the contrasting challenges that children from diverse social groups face.

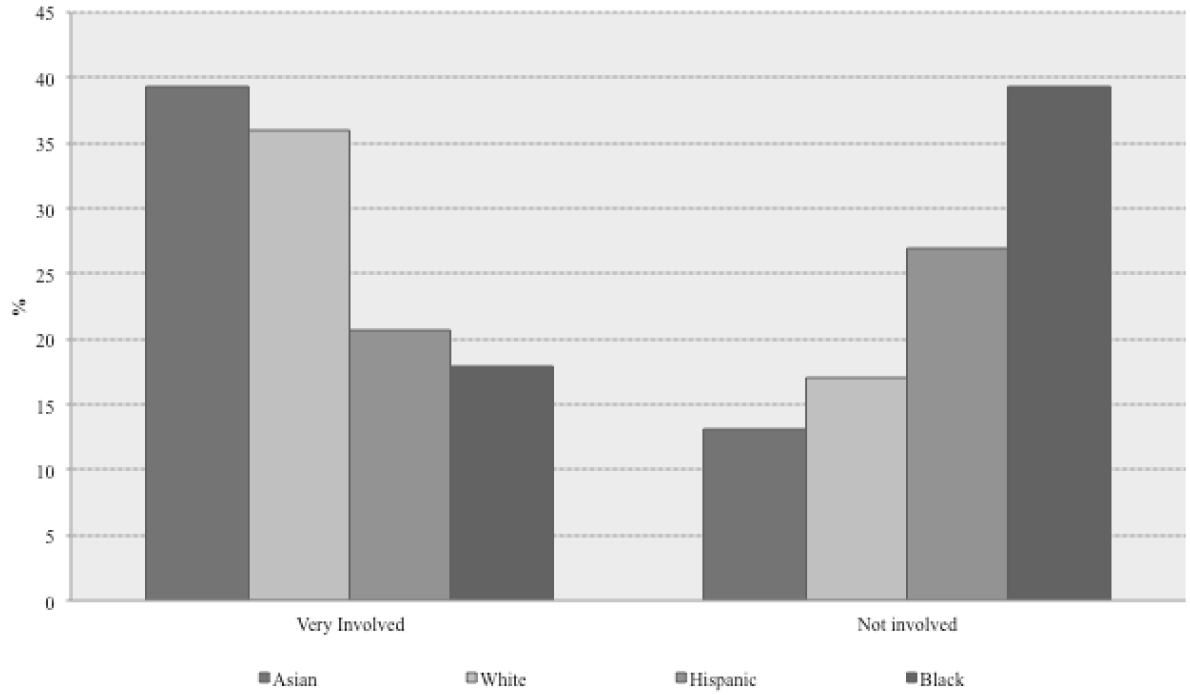

Figure 3.7: Math teacher's perception of parental level of involvement for those parents who do not participate in any parent-school activity. United States, 2002.

Neglecting to notice these differences implies failing to notice EIEO.

But, what about the parents? Figure 3.7 displays the math teachers' perception of parental involvement when parents[8] do not participate in any of the five following activities:

1. Belong to a parent-teacher organization.
2. Attend a parent-teacher organization.
3. Take part in parent-teacher organization events.
4. Acts as a volunteer at school.
5. Belong to another organization with parents of the school.

The results seem to indicate that the highly-educated parents of Asian and white children are perceived as "*very involved*" to a much higher proportion than the highly-educated parents of Hispanic and black children, even if they do not participate in any of the aforementioned activities. They are also perceived as *"not involved"* to a lesser degree than Hispanics and blacks when they, in fact, have zero participation in those activities. Again, the differences among ethnicities might have their origins in children's disparities in school performance. Thus, teachers might explain achievement disparities by the unequal parental involvement and pupils' effort, rather than by unequal learning and living conditions.

All in all, both children and parents from Hispanic and black ethnicities tend to be perceived as less involved in education than Asians and whites, even when their level of effort is similar.

[8]The sample is comprised exclusively of highly-educated parents.

It is apparent from the results that performance and not effort is the main factor influencing teachers' perceptions. Briefly, blacks and Hispanics are held responsible for their comparatively low achievement, without taking into account the environment in which their educational experiences take place. The results presented in the next section suggest that Asian and white children tend to out-perform their black and Hispanic counterparts and, not only that, they are also more stable as top achievers and less persistent at the bottom of performance.

3.6.3 Ethnicity and educational performance in the US

The underperformance of ethnic minorities in education is suspected to be a consequence of their restricted financial resources, as well as low PHC. However, even when they are from highly-educated families, children of black and Hispanic ethnicity tend to underperform Asian and white children. Figure 3.8 displays the quartile of standardized score composites on reading and mathematics by ethnic background and PHC. The results suggest that - regardless of ethnic background - as PHC increases so does children's achievement. However, PHC appears to affect in a different manner children from diverse ethnic backgrounds. First, low performers are much more common within the black and Hispanic communities. As a way of illustration, black youngsters with highly educated parents seem to perform at a lower level than white and Asian children with low-educated parents. More precisely, 21% of white and 29% of Asian children with low-educated parents perform at the bottom quartile, while 34% of highly educated blacks and 28% of Hispanics do.

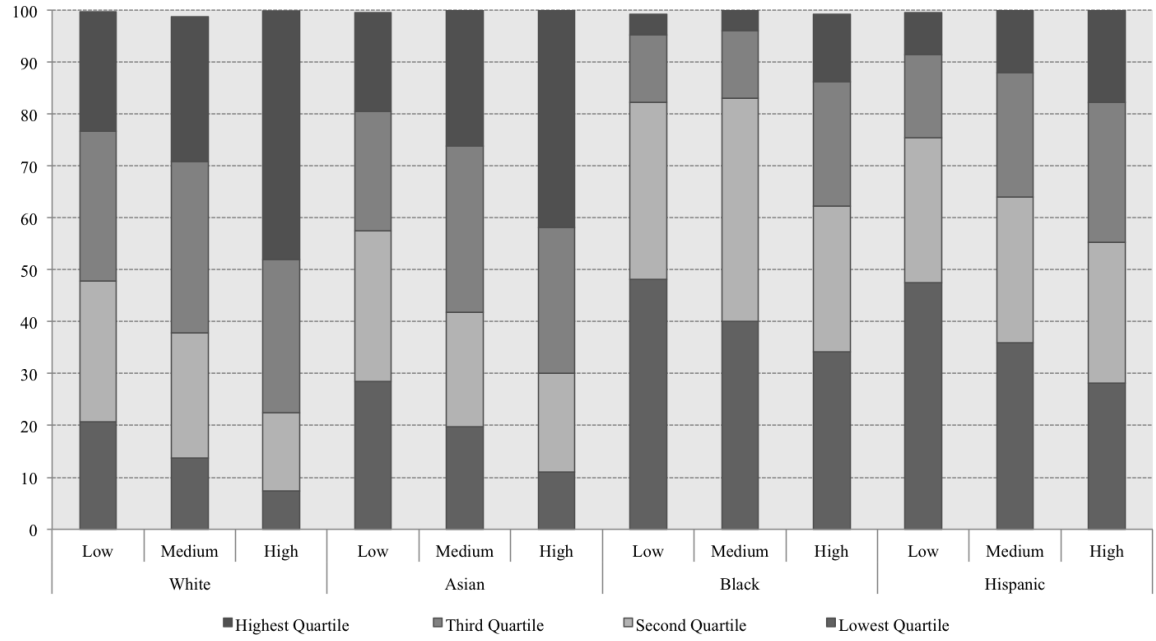

Figure 3.8: Quartile of standardized score composites on reading and mathematics, by ethnic background and parental human capital. United States, 2002.

If we turn our attention to top performers, we can see that there are again meaningful differences between ethnicities. First, the share of high performers is the highest among white children with high PHC (48%), followed by Asian children with highly-educated parents (42%). In

contrast, highly-educated black parents appear to have some trouble passing their human capital on to their offspring, and only 13% of them raise high performers. Hispanics are not as successful as whites and Asians, but the share of high achievers is larger than among the highly-educated black offspring (22%). It is worth noting that the share of top achievers is greater among Asians (19%) and whites (23%) with low PHC than in the case of blacks with high PHC (13%). In addition, highly-educated Hispanic parents appear to raise a similar proportion of high achievers (22%) than do low-educated whites and Asians.

Although the gap between ethnicities is salient, the gap within them is also worth noting. In this case, an interesting pattern emerges: the gap among privileged ethnic backgrounds (whites and Asians) is wider than within underprivileged ethnic minorities (blacks and Hispanics). In this regard, the share of top performers among white children with high PHC is more than twice the proportion of high achievers among white children with low PHC (48% versus 23%). Asians follow the same trend, with a 23% gap between low and high PHC offspring. In contrast, the gap within the black and Hispanic community is much smaller, 9% for the former and 14% for the latter.

In sum, these findings suggest diverse patterns:

1. As we move up in the PHC hierarchy the proportion of children performing at a top level increases. This trend is especially clear **within** ethnic backgrounds, and the gap within privileged ethnicities (whites and Asians) is wider than within underprivileged ethnic minorities (blacks and Hispanics).

2. There are substantial differences *between* ethnic backgrounds. High performers appear to be much more numerous among white and Asian children with high levels of PHC than among black and Hispanic children with high levels of PHC. Thus, parental education seems to not fully compensate for the disadvantages of underprivileged ethnicity.

3. Low-educated whites and Asians have children that perform at a higher, or similar, level than highly-educated black and Hispanic parents do.

4. Blacks and Hispanics appear to underperform whites and Asians within every PHC level.

3.6.4 Snowballing or melting privilege?

Previous research has found that the children of the upper class are better able to make up for a false step (Bernardi, 2012).This is because upper-class parents have the financial and cognitive resources to effectively invest in their children and rescue them from the risk of social demotion. Yet, little is known about how membership of another (dis)advantaged social group such as ethnicity shapes the chances of recovery for upper-class children. Hence, would black upper-class children be as likely to recover as the child of upper-class whites? Or would (s)he fail due to the disadvantages of being from an underprivileged ethnicity? Figure 3.10 aims to disentangle this puzzle.

Figure 3.9 shows the transition probabilities among quartiles of performance in mathematics for children with high PHC by ethnicity. Whereas the the x axis shows the quartile of performance in 2002, the bars of the graph display the probability of performing in a specific quartile in 2004 . Hence, we could say that the x axis displays the "origin" while the bar refers to "the destination". This figure is quite revealing in several ways. Firstly, an Asian child with highly-educated parents

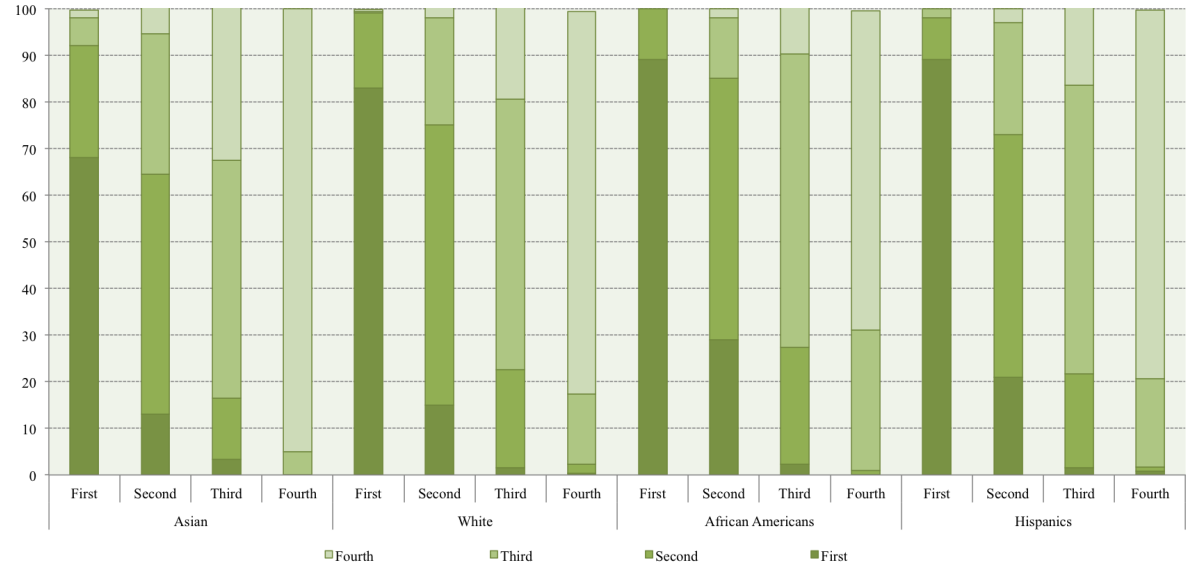

Figure 3.9: Transition in mathematics quartile of performance by ethnic background. Upper class children, United States, 2002-2004.

has a 95% chance of being a high performer both in 2002 and 2004, while the likelihood diminishes to a 83% for a white child. Secondly, both an Asian and a white child appear to successfully make up for initial failure and are less likely to persist as bottom achievers than a Hispanic or a black child is. More precisely, an Asian child has a 24% chance of moving from the bottom quartile to the second quartile of performance, while a white child has a 16% chance of following the same path. In contrast, black or Hispanic children are less stable as top performers and more likely to persist as low achievers. In this regard, a black child who performed at the top level in 2002 has just a 68.5% probability of persisting as a top performer in 2004, which means that (s)he is 10% less likely than a Hispanic (79%), 26.5% less likely than an Asian, and 13.5% less likely than a white. Finally, black and Hispanic bottom performers in 2002 were slightly more likely to persist as such than a white child (at 6% more) and much more than an Asian child (around 21% more likely).

If we now turn our attention to students close to the top in 2002 - those in the third quartile of performance - we can see the most likely outcome is persistence in their achievement level. Still, an Asian child had a 33% chance to make it to the top quartile and a white child had a 20% chance of following the same path, although they also had a 13% and 21% chance respectively of falling to the second quartile. Once again, blacks and Hispanics differ from Asians and whites. A black child had a 25% probability to fall from the third to the second quartile, and only a 10% chance of making it to the top in 2004. A Hispanic child seems to have slightly better chances, at 17%, to make it to the top, and a 20% chance of falling to the second quartile of performance in 2004.

These results suggest that even if black children with highly-educated parents produce a top performance, they tend to be less stable than their Asian, white, and Hispanic counterparts. Yet, their stability as bottom performers is similar to Hispanics and whites. In addition, average students of Asian ethnicity appear to have been better able to improve their performance in the period 2002-2004, and they are more likely to produce a top performance than fall to the second quartile. The results suggest that whites are as likely to improve than to decline in their performance. Finally, Hispanics and blacks seem more likely to fall than jump to the closest

quartiles of achievement. Altogether, these results point to a different distribution of performance within the third quartile of performance by ethnicity. Presumably, children from Asian backgrounds were already close to making it to the top in 2002 and they finally made it 2004. In contrast, blacks and Hispanics might have been closer to the lower threshold, and fall behind two years later. Finally, whites might have a more heterogeneous distribution within the third quartile of performance.

Briefly, these results suggest that PHC does not fully compensate for ethnic discrimination, and Hispanic and black children appear to have lower educational opportunities than their white and Asian counterparts. Upper-class whites come across as a social group that carries on the benefits of class and ethnicity. At the same time, Asians appear more able to overcome the hardships of having lower-quality schools than their white counterparts and reach the top performance in high proportions. To cut a long story short, the perks of being white seem to be persistent in the US educational system, or, more precisely, the hindrance of being black or Hispanic is still salient in the US.

3.6.5 Four shades of advantage

Up until now, the results appear to indicate that having highly-educated parents conveys diverse advantages depending on ethnicity. This might be due to the income gap between ethnicities with similar educational credentials. Figure 3.10 displays the household income of children with high PHC by ethnicity. From the figure we can see that white children with high PHC live in fairly wealthier households than do ethnic minorities. In this manner, 34% of them live in households with an income of over $100,000, while only 15% of blacks and 19% of Hispanics do. Asians seem to be closer to whites than to blacks and Hispanics, but still lag behind them (27%). In conclusion, black and Hispanic children with high levels of PHC live in less affluent households than their white and Asian counterparts, and, hence, we must take these divergences into account in order to understand the EIEO.

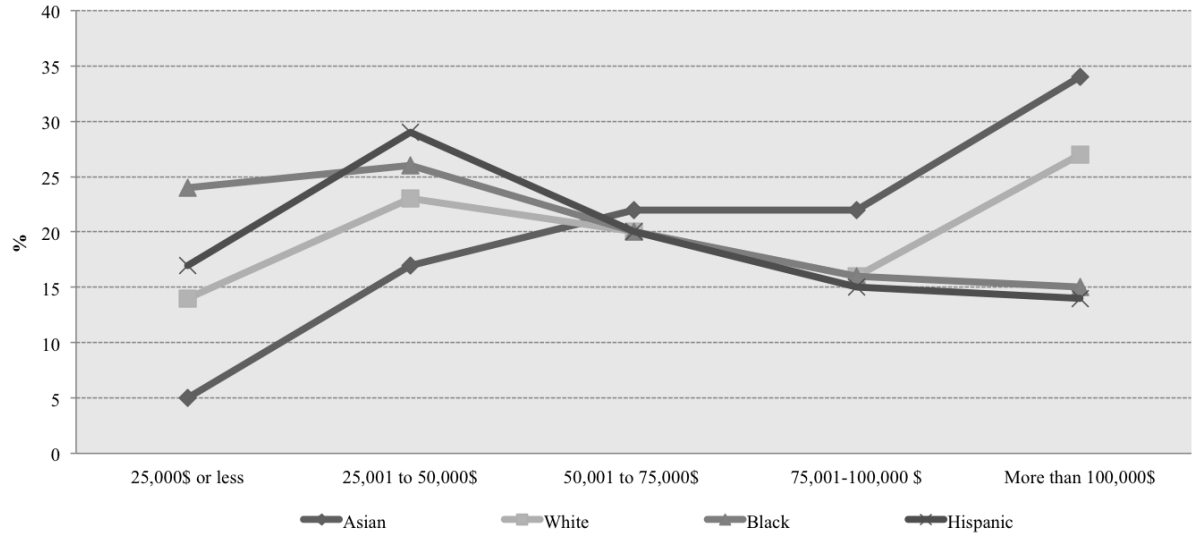

Figure 3.10: Household income of highly educated families by ethnicity. United States, 2001.

In order to account for diverse living conditions and family characteristics, two simple lon-

gitudinal probit regressions have been modeled (using wave 1 and 2, which refers to the period 2002-2004)[9], one for the bottom quartile and one for the top quartile of performance in mathematics. Hence, quartile of performance in mathematics has been modelled as a function of ethnicity, PHC, household income, family composition, gender, generational status, and proportion of the student body in the free-lunch/reduced price program. The predicted probabilities have then been computed for children who live in biparental families, are third-generation or native US citizens, live in a household with an income of between $75,000 and $100,000 annually, and attend a school with low levels (less than 6%) of the student body in free-lunch/reduced price program. Hence, these are children living in fairly wealthy and educated biparental families attending a school with low levels of poor student body (table 3.7).

	Bottom quartile		Top Quartile	
	Female	Male	Female	Male
Asian	4	4	57	65
White	5	4	48	55
Hispanic	14	30	30	38
Black	16	15	20	26

Table 3.7: Likelihood of performing in the top/bottom quartile in mathematics by ethnicity (%). Children with high levels of PHC. United States 2002-2004

As can be seen in table 3.7, there are substantial differences between ethnicities and genders, even when children share the same socioeconomic and family characteristics. In this regard, an Asian (65%) or white (55%) boy is much more likely to perform in the top quartile of performance than a Hispanic (38%) or a black boy (26%). The probabilities of being a top performer in mathematics are lower for girls, yet, the ethnic "hierarchy" persists. In this manner, whereas the likelihood of being a top achiever for an Asian girl is around 57%, it diminishes to 48% for a white girl, 30% for a Hispanic girl, and 20% for a black girl. Females are, hence, less likely than males to be high performers in mathematics, and a black female is the least likely to be a high achiever. On top of that, girls appear to be more likely than boys to be bottom achievers and the ethnic hierarchy "reverses" (table 3.2). Thus, whereas the probably of being a bottom achiever for a black girl is 16% it decreases to 4% for an Asian girl. For a black boy this likelihood is slightly lower (15%) while there are no gender differences among Asians. A white child is almost as likely to be a bottom achiever as an Asian, regardless of the gender of the child, and a Hispanic child seems to mimic the chances of a black child. Hence, yet again, whites and Asians appear to pair at the top, while black and Hispanic children are left behind.

At this point is important not to lose sight of the fact that these probabilities are computed for children who live in highly-educated and rather wealthy families. Hence, we cannot blame household income or parental education for the disparities in mathematics performance. What is more, the school and family composition characteristics are set to the "most advantaged" scenario. These results, hence, illustrate the opportunities that wealthy Americans of different ethnicities have regarding education. More precisely, the perks of being white appear to be something that neither education nor money can procure.

[9]The probit model is available in the Appendix B.

	Bottom quartile		Top quartile	
	Female	Male	Female	Male
Asian	9	8	40	48
White	10	8	30	38
Hispanic	21	19	17	21
Black	25	22	10	14

Table 3.8: Likelihood of performing in the bottom quartile in mathematics by ethnicity (%). Children with low levels of PHC. United States 2002-2004

Table 3.8 presents the probabilities for children with the same characteristics presented in table 3.7 but whose PHC is low. The reason for computing the probabilities for the offspring of low-educated parents is the following. Previous research has pointed out that children from the upper class perform at a higher level than they used to, and that increases in income inequalities do not explain the widening gap between rich and poor (Reardon, 2011). Hence, inequalities of performance might not be a product of unequal economic capital, but due to disparities in knowledge on what to invest. In addition, the results presented in the previous section suggest that the gap between PHC levels is higher among privileged ethnicities than among low educated families. Hence, computing the probabilities for different levels of PHC but similar income levels might help to unravel whether this pattern holds even when families have similar financial assets but not the knowledge of what to "purchase".

What happens, then, when parents have the means but not the experience of the system? Basically, whereas the probability of being a bottom achiever increases, the likelihood of being a top performer diminishes. More precisely, the results suggest that the gaps between genders and ethnicities persist, although these gaps appear to be more moderated than among children with high PHC. If we turn our attention towards top achievers we can see that an Asian child still persists at the top, although the chances diminish from 65% to 48% for a boy and from 57% to 40% for a girl, which constitutes a substantial gap (of 17% for both genders). For a white child the likelihood of being a top performer diminishes to 38% for a boy and 30% for a girl (again, around a 17% gap). The breach among underprivileged ethnicities, however, is slightly lower. More precisely, the probability of being a top achiever declines to 17% for a Hispanic girl and 22% for a boy (a 13% and 16% gap between PHC levels, respectively). A black child is, again, the least likely to be top achiever (a 10% chance for a girl and a 14% chance for a boy, which constitutes around a 10% gap between PHC levels). Altogether, these results seem to indicate that the perks of having highly educated parents are substantial for top achievers. Still, this also helps bottom performers. In this vein, among children with low PHC, the least likely to be bottom performers are Asians, followed by whites. A black or Hispanic child, in contrast, has over a 20% probability of being a bottom performer if the parents have the means but do not have experience of the system.

Altogether, these results suggest that EIEO still persists in the US, even among upper-class children. Nonetheless, parental education seems to help children from disadvantaged ethnicities. Indeed, they perform better than the offspring of lower-educated parents from the same ethnicity. Yet, PHC and income do not boost their achievement as they do with children from privileged ethnicities. As a matter of fact, a white child with low-educated parents is more likely to be a top achiever than a black child with highly-educated parents is. Upper-class membership, therefore,

does not seem to benefit diverse ethnicities in a similar manner. What is more, the gap within underprivileged ethnicities appears to be smaller than the one for privileged ethnic groups. This pattern suggests that, while some children accumulate the perks of privileged ethnicity and the upper class - meaning that their performance is boosted by two sources of advantage - other children see their initial class advantage fade when it crashes into the disadvantages of an underprivileged ethnicity.

3.7 Discussion

Previous research has pointed to inequalities in economic, cultural, and human capital as the main cause of EIEO. While it is true that black and Hispanic upper-class children outperform their less advantaged counterparts, disparities among the upper-class children of different ethnicities appear to be salient. The most striking result of this chapter is that the children of the upper class do not seem to be safe from the complications that ethnic disadvantages put in their way. The results suggest that ethnically underprivileged upper-class children underperform compared to their ethnically privileged counterparts. What is more, upper-class blacks and Hispanics have lower chances of performing at a high level than white and Asian children from lower socioeconomic groups.

Furthermore, when black and Hispanic upper-class children manage to perform at the highest level in mathematics, they are much less likely to persist as high performers than Asians and whites. They are, however, more stable as bottom achievers. Even more, among mediocre students Asians and whites are more likely to improve their performance, while blacks and Hispanics are more likely to fall behind and drown in the bottom level of performance. In brief, it seems that upper-class blacks and Hispanics do not enjoy the same class advantages that their white and Asian counterparts do.

Nonetheless, the configuration of the black and Hispanic upper class has been influenced by the discriminatory practices of government agencies, banks and real estate agents, which have constrained their housing options and living conditions. Indeed, even after the abolition of de jure segregation and the passage of the Fair Housing Act, we can see that the offspring of highly-educated blacks and Hispanics live in lower-quality neighborhoods than their white counterparts. They are more exposed to the perils of low-income and low-educated peers, not only in their neighborhoods but also in their schools. Thus, membership of the upper social class seems not to entitle the same privileged educational environment for diverse ethnicities. The historical processes of discrimination, therefore, still affect the chances of black and Hispanic children in the US. Be that as it may, the analysis conducted suggests that ethnic disparities in the likelihood of being a bottom/top student in mathematics still hold after accounting for neighborhood and poor-peer effects.

Meritocracy beliefs are widespread among the US population, and teachers are not an exception to this rule. More precisely, teachers seem to perceive achievement inequalities as the product of diverse levels of effort rather than the product of the practices of inclusion/exclusion of the privileged groups. In this manner, the system is not perceived as a social reproducer of inequalities; instead, children from underprivileged ethnicities are held responsible for their academic underperformance. In addition, the parents of black and Hispanic children are perceived as less

involved in their offspring's education than whites and Asians are, even if they show similar levels of engagement. In a nutshell, instead of explaining inequalities of achievement as due to the unequal learning and living conditions of upper social class children from different ethnicities, teachers appear to explain the relatively lower achievement of discriminated groups as a result of their "lack of" hard work.

All in all, as we move further away from the reference of privileged ethnicity - whites - living conditions, educational performance, and teacher perceptions seem to worsen. It is worth remembering that these children are the offspring of highly educated and rather wealthy parents. Therefore, it is apparent that whereas whites accumulate and multiply "privilege", the children of underprivileged ethnic minorities see their initial advantage fade when it collides with their discriminated ethnicity. So far, and whatever the mechanism driving these results is, it appears that neither having highly-educated parents nor living in a high-income household can redeem for the disadvantage of an underprivileged ethnicity. Therefore, we could infer that the perks of being white seem to be something that neither money nor parental education can provide.

These results are, nonetheless, just a first step to a better understanding of how membership of an ethnically-disadvantaged group can affect the chances of upper-class children in education. In further steps, it would be worth tackling the puzzle of how the process under analysis varies within the geography of the US. Indeed, ethnicity conveys very different (dis)advantages and meanings in the South, North, East and West of the US. Furthermore, these results could be a particularity of the US socioeconomic and institutional system, and, above all, a product of historical processes that took place within this geography. To better understand whether the findings are the product of a broader mechanism or a "simple" particularity of the US, the analysis should be replicated in other countries such as the United Kingdom, Canada or Australia. These case studies provide a sociocultural setting in which ethnicity also conveys certain (dis)advantages but, at the same time, their institutional settings are quite different from the US. For the boldest researchers, it could be replicated in more extreme cases, such as India or South Africa. As a matter of fact, longitudinal data is available in all the aforementioned countries. Finally, if the findings are replicated in different contexts, we could infer that indeed no matter where, there are some perks that money cannot buy.

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CHAPTER 4

THE DYNAMICS OF PRIVILEGE IN THE REPUBLIC OF KOREA EDUCATION SYSTEM

This chapter focuses on the dynamics of privilege in the Republic of Korea. More precisely, it applies a dynamic rational choice approach with the aim of disentangling parental choices and strategies regarding the use of private tutoring. To do so, the chapter builds upon Lareau's findings(Lareau, 1987, 2000, 2011) and follows the lead of Boudon's theory on the primary and secondary effects of social origins in education (Boudon, 1973; Erikson, 2007; M. Jackson, 2013). The longitudinal analysis done using KYPS data focuses on the "1.5 effects of social origin" in education. In other words, when social origin has already affected the capacity of children to perform in school but the crucial choice regarding education has not been yet made. With this approach, the chapter seeks to disentangle the dynamics and limits of privilege in one of the most restrictive educational frameworks in the world: South Korea.

4.1 Introduction

Boudon's distinction between the primary and secondary effects of social origin in education (Boudon, 1973) may be one of the most significant pieces of research that enlightens why, despite the expansion of education systems, Inequalities of Educational Opportunities (IEO) still persist. In this vein, primary effects are understood as the mechanisms by which social origins affect the capacity of children to perform in school. The secondary effects of social origin, however, refer to the unequal educational choices made by individuals with a similar achievement but different social class. However, little is known about the dynamic nature of the ways through which social origins affect children's school performance. In short, what happens when the social origins "malfunction" producing thus an unexpected achievement in school? In other words, what do parents do when the primary effects of social origins do not have the expected outcome?

While Boudon's work sheds light on the diverse mechanisms by which social origins may affect children's achievement, Lareau's studies suggest that parental nurturing practices have a crucial role in the process of IEO. Her findings indicate that whereas poor and working-class

parents engage in the *"accomplishment of natural growth"*, middle- and upper-class parents display the *"concerted cultivation"* of their children. Thus, inequalities are not only a product of dissimilar assets and choices, but also a consequence of different nurturing practices by social class. As regards this chapter, however, the most enlightening finding of Lareau's studies is the unequal parental reaction to children's performance by social class. More accurately, her research pinpointed that performance "against the odds" triggers intensive parental involvement in education. Hence, whereas middle- and upper-class parents tend to be more engaged if their children have difficulties at school, poor and working-class parents are more involved when their children perform well (Lareau, 2000, 2011). Therefore, unexpected performance seems to prompt parental involvement. In the same vein, research on the *compensatory effects* of social origin suggests that socially advantaged parents are better able to make up for a "false step" than their disadvantaged counterparts (Bernardi, 2012; Bernardi & Grätz, 2015). Yet, Lareau's findings point to dynamic parental responses also among the working class. Instead of compensating for a false step, however, parents would be compensating for underprivileged social origins. It is at this point when this research comes to play. More precisely, this research aims to shed light on the dynamics of parental choices regarding education, and the role that both social origins and children's performance play when making these decisions.

Building on Lareau's findings and making a hybrid between Boudon's (1974) theory and the literature on the compensatory effects of social class (Bernardi, 2012; Bernardi & Boado, 2013; Bernardi & Grätz, 2015), Bernardi et al., 2015), this chapter argues that parents respond in a different manner to their children's performance due to relative risk aversion mechanisms. The reasoning is as follows. Parental strategies are triggered by children's performance and, therefore, they are dynamic and adjustable to past events. In turn, performance against the odds[1] should re-calibrate the rational calculus behind parental choices and strategies regarding their children's education. As a way of illustration, working-class parents would engage more in their resilient offspring because social promotion seems possible (due to their offspring's high performance), while they will not engage if their children do not show clear chances of success in the next educational stage. In contrast, the upper class may be over-involved in their failing offspring in order to avoid social demotion, although this does not necessarily mean that they will invest in them significantly more than in their successful offspring (since upper-class success in education is partly due to these investments). Therefore, rather than compensating for disadvantage, the upper class would be seeking advantages across levels of performance, while the working class would only be actively looking for advantage if their offspring are resilient students. To unravel whether this is the case in Korea, the chapter focuses on the mid-point between primary and secondary effects. In other words, once social origins have impacted children's achievement (primary effects of social origins) but the crucial choice has still to be made (secondary effects). It therefore tackles the *1.5 effects of social origins* in education. Briefly, we could understand these latter effects as the strategies developed as a consequence of the "malfunction" of the primary effects of social origins, which would therefore create the scenario for social mobility when parental strategies must be more crucial.

Parental strategies and choices, however, are not displayed in a vacuum. They must adapt

[1]Here, performance against the odds is understood as a non-common pattern according to ascription to one social group. For example, failing upper class students, but also working class high performers.

to the child's needs and talents within the boundaries of the institutional framework. In South Korea, the education system appears to set strong limits on parental influence in the education process. In short, South Korean parents cannot select the school of their children, nor can they choose the curricula or the academic standards of the subjects. At the same time, the country suffers from educational fever (J.-K. Lee, 2006), and education is believed to be the main tool that leads to success. Moreover, social inequalities in South Korea are quite low, which means that different social classes have more or less the same tools to help their children. Perhaps due to the aforementioned institutional restrictions and high parental expectations, South Korean parents may turn to the private after-school system to tailor an educational process that suits their offspring's needs and talents. Participation in these private-tutoring activities is believed to foster student achievement and, therefore, it constitutes a powerful sector to take into account when analyzing the strategies and choices that parents make regarding heir children's education. Consequently, South Korea is a great case study for testing the limits of social privilege in education.

Because of the reasons so far given, this chapter does not follow the traditional lead of the aforementioned theories. Instead, it combines and links them in order to go a step forward in unraveling how privilege works. More precisely, it takes a game theory approach to better understand how choices are made once primary effects have affected children's performance although the crucial educational transition point[2] has not been reached. At the same time, since choices are not static, neither should the analysis conducted be. Hence, the longitudinal analysis is built upon the middle-schoolers sample of the Korean Youth Panel Survey (KYPS), and a dynamic binary model is implemented with the aim of pinpointing the limits of privilege in one of the most restrictive educational frameworks.

4.2 The main puzzle

Hence, what is this chapter about? Mainly, it is about the dynamics inherent to parental educational choices and the role that children's achievement plays in it. In this regard, whereas the literature on primary and secondary effects is of extreme help to understand IEO and the mechanisms driving it, it can be misleading too. This is because by separating social origin effects into two differentiated stages it leads to a rather static enquiry in which the intrinsic dynamics of decisions and strategies are not part of the analysis. The primary effects of social origins suggest that the different living conditions and environment to which children are exposed affect their capacity to perform in school. Further, the secondary effects refer to the unequal choices that children make, not because of their achievement but because they have different expectations regarding education due to their social origins. Yet, what happens in between? In other words, what happens when children are already displaying a performance in school but they have not yet decided which educational path to follow? Most importantly, what about those that, despite deprivation, succeed in school? In sum, how do parents react when their children are outliers of their social class? While

[2]It is important to note that whereas in most countries the enrolment in high school tracks is the main transition point, I do not consider this to be the case in South Korea. This is because attendance to one university or another is the main tool used to stratify individuals in the labor market and, therefore, in the social hierarchy. Hence, I consider the transition to university, and not to high school, the crucial transition point to take into account in South Korea

the primary effects of social origin help us to understand the average impact of social class into academic abilities, it does not contribute to understand the decisions that parents make when these primary effects "malfunction" and the logic behind their decisions. To offer a first approach in the analysis of this puzzle, I propose a rational choice approach. More precisely, I believe that the application of a game theory in which the dynamics of parental choices are taken into account could be of assistance to answer the posted questions.

Hence, the 1.5 effects of social origin may be understood as the continuance of the primary effects of social origins, when performance in school has already been displayed but there is still room to improve (or worsen) achievement in different domains, and before educational choices must be made. In this chapter, private tutoring enrolment is understood as the strategy through which parents attempt to boost their children performance in different domains. This is because the South Korean educational system is highly comprehensive and there is very little room to customize the educational curricula and experience of children within the formal system. Hence, enrolment in private tutoring for mathematics is considered as the main dependent variable, and a rational choice model based on game theory is used to explain the patterns and decision making of parents with regard to their children's education.

The research questions to be tackled in this chapter, hence, can be summarized as follows:

1. Which is the role of previous performance in enrolment in private tutoring?

2. What happens when children's performance is not consistent through time?

3. Conditional on achievement, do parents of different social origin make different choices regarding private tutoring enrolment?

4. Do parents follow the rational choices predicted by game theory regarding the "best strategy" for their situation?

4.3 Theoretical background

4.3.1 Unequal origins

The expansion of education systems has brought in children from disadvantaged social backgrounds, but it has failed to provide equal chances for all. Boudon's (1974) work on the primary and secondary effects of social origins in education is perhaps one of the most influential pieces of research to analyze why, despite the dramatic expansion of educational systems, IEO still persists.

Primary effects are understood as the impact of social origins on the capacity of children to achieve in education (Boudon, 1973; Erikson, 2007; Van de Werfhorst & Andersen, 2005). In this vein, divergences in financial assets are one of the most recognized causes of the disparities in school performance. Households with high financial resources can provide their children with educational goods, such as private tutoring, private schools, and books. Besides the direct investments in education, high-income families can also afford better neighborhoods, appropriate nutrition, healthcare, and childcare. The advantage, however, is not restricted to financial resources, but is also about knowing what to do with those assets.

Parents with high levels of human capital have gone through the higher levels of the educational system. Due to this experience they know what is needed to succeed in education and how to negotiate advantages within the boundaries of the institutional framework. In this manner, they are able to help and assist their offspring with their educational decisions. Cultural capital, in contrast, does not have intrinsic value. Its power emerges when it is translated into socially valuable skills and aptitudes. The number of books at home, for example, is used as an indicator of the household cultural capital level. However, books per se do not constitute an advantage, unless they are used to accumulate language skills. Indeed, previous research has found that children from families with high cultural capital are better learners due to their familiarity with abstract reasoning and intellectual challenges (Van de Werfhorst & Andersen, 2005), in other words, due to *concerted cultivation* (Lareau, 2000, 2011).

Less advantaged families, in contrast, are subject to the boundaries of limited resources. Their vulnerable position in the social hierarchy is translated into constrained residence options, lower-quality healthcare, inadequate nutrition, and poor childcare. Therefore, children from humble origins undergo several life limitations that hinder their school performance. Indeed, deprivation early in life hampers brain development, which in turn affects the cognitive function (Farah et al., 2006; Nelson & Sheridan, 2011). Altogether, disparities in economic, cultural, and human capital lead to unequal childhoods and parental nurturing practices (Lareau, 2000, 2011) producing the primary effects of social origin in educational achievement.

The *secondary effects* of social origin on educational achievement are related to choices - conditional on achievement - and operate through disparities in aspirations. Individuals make a rational calculus of the costs, benefits, and the probabilities of success at a given educational stage. This calculus is strongly biased by social origins. Briefly, in order to achieve class maintenance individuals of different social origins must attain different levels of education. Therefore, when facing the decision of whether to continue or to drop out of education, children from diverse social origins with similar achievements make different decisions due to disparities in their ambitions. Indeed, previous studies have found that upper-class children are more likely to continue in education than their less advantaged counterparts, conditional on achievement (Erikson, 2007; M. Jackson, 2013; Ress & Azzolini, 2014). Yet, individuals and families do not make decisions in a vacuum. On the one hand, they must adapt to the institutional framework, while on the other education is a dynamic process in which individuals adjust their behavior due to previous experiences (H.-P. Blossfeld & Prein, 1998).

4.3.2 Unequal parental responses

In her seminal work, Lareau (Lareau, 2000, 2011) conducted a qualitative analysis of the nurturing practices of parents from diverse social classes. She found that middle- and upper-class parents appear to engage in the promotion of their children's talents through the stimulation of their cognitive and non-cognitive abilities; this parental "style" has been termed *concerted cultivation*. They also tailor their children's educational processes to suit their offspring's needs and talents. For the purpose of this research, however, the most appealing of Lareau's findings is that upper-class parents with low performing offspring are the most preoccupied with their children's education. Hence, the risk of social demotion due to bad school performance may stimulate upper-class

parental responses more than educational success does.

Lareau also found that parents from less advantaged social backgrounds engage in what she named the *accomplishment of natural growth*. More precisely, working-class and poor parents struggle to cover basic needs such as nutrition, housing, and health. This struggle constrains their nurturing practices due to the lack of financial resources but, even more, due to the lack of time. Concomitantly, their insufficient knowledge of the system is translated into uncertainty of how to help their children. The fear of hampering their offspring's education prevents them from being more active in their children's educational process. Yet, when their offspring overcome their humble origins and reach high levels of school performance, parents from underprivileged social classes appear to engage more in their children's education (Lareau, 2000, 2011). Hence, the chance of social promotion appears to trigger the parental involvement of the less advantaged social classes.

Altogether, Lareau's results suggest dissimilar parental responses to achievement according to social origins. Relative risk aversion mechanisms may push parents from the middle and upper class to "over-involve" themselves in order to prevent their children's social demotion. The possibility of social promotion, in contrast, would pull up the engagement of parents from less advantaged backgrounds. These different responses, however, are the products of a similar rational calculus. In this manner, Lareau's findings partially support the dynamic rational choice approach of this research. Unexpected achievement alters the rational calculus made by individuals: when students perform against the odds, parents adapt their educational strategies to the new scenario. These adjustment strategies would happen before the crucial transition point in which secondary effects would take place, and, in this manner, we would be finding the *1.5 effects of social origins* in education. The institutional framework, however, cannot be forgotten. The education system sets boundaries to the ways in which social origins affect educational outcome, and South Korea appears to be quite proficient at limiting the ways in which class privilege can be transformed into effective advantage.

4.3.3 Against the odds

The literature so far developed regarding the compensatory effects of social origins provides an excellent background to build upon. So far, it has pointed out that children from advantaged social classes are better able to recover from a "false step" than their less advantaged counterparts (Bernardi, 2012; Bernardi & Boado, 2013; Bernardi & Grätz, 2015). This research aims to follow the lead of the compensatory effects literature and take a step forward by focusing not only on failing privileged students, but also on the successful ones.

Performance against the odds is a rare but still meaningful phenomenon. It triggers remarkable strategies from both parents and children and its analysis can shed light on paths that the analysis of the "averages" cannot enlighten upon. Hence, this research also takes a glance at the outliers. However, instead of exclusively focusing on failing students and the compensatory effect of advantaged social origins, this research also takes a glance at the "underdogs". In other words, in addition to the analysis of the upper class failing student - as proposed by the literature on the compensatory effects of education - this research proposes an analysis of the working-class resilient pupils. The chapter therefore analyzes how the chance of social promotion through good

academic performance shapes parental investments in education. In doing so, it understands the *compensatory effects* in education in a broad sense. While some students must compensate for educational failure, others must look for benefits in their disadvantages.

The chapter argues that unexpected achievement calls for unforeseen measures. The abnormal "behavior" of the primary effects would essentially produce a re-calibration of the secondary effects if during the in-between period the strategies are adapted to the new scenario. Hence, the 1.5 effects of social origin are understood as the adjustment strategies to previous achievement (with especial attention to unexpected achievement). These strategies, however, must be consistent with the institutional framework.

4.4 The institutional boundaries to privilege

One of the most asked questions when this research is presented is: Why the Republic of Korea? Firstly, the Republic of Korea is one of the top achieving educational systems in PISA. No matter the domain under assessment, Korean pupils are always among the top performers (OECD, 2012a, 2012b).Secondly, its dramatic educational expansion has been accompanied by policies that aim to improve the equity of the system, such as the High School Equalization Policy (HSEP). Thirdly, South Korean society is one of the highest-educated societies in the world, with over 60% of its young population holding a tertiary degree (OECD, 2012a). Mass tertiary education has produced a highly competitive race to reach the top of the social hierarchy, and parents must hence work hard to provide their children with a head start. In sum, South Korea represents a big challenge to the effects of social origins in education and, therefore, an interesting case to test the limits of privilege and its compensatory effects.

4.4.1 Parental degrees of freedom

Since 1974, the HSEP has left few degrees of freedom for parental intervention. Following a lottery system, South Korean students are randomly allocated to a school within their district, and curricula are much the same nationwide. Moreover, retention due to bad performance is rare, and children thus continue with their classmates even if they do not perform at a sufficient level. The absence of tracking by ability, the high levels of curriculum standardization, and the absence of school choice impede the perception that parents have of formal education. Indeed, Korean parents tend to perceive that the education system does not take appropriate care of their offspring's needs and talents. Simultaneously, mass tertiary education has produced credential inflation. In order to maintain their privileged social position, individuals must differentiate themselves in terms of quality in education (Lucas, 2001). Yet, competition to be admitted to a highly selective university is tough and parents must navigate within the boundaries of the system to provide their children with an effective advantage. This is because there are few prestigious universities, and graduation from them partly guarantees a high profile job (S. Lee & Brinton, 1996).

A parallel system has emerged in the shadow of the South Korean comprehensive and standardized education system. This shadow education system provides after-school academic lessons and, at the same time, instructs children in test preparation. Due to the HSEP regulations, parents appear to have little room to customize their children's education within formal education (since

they cannot select the school and neither can they select the curricula), hence, they may therefore use the shadow education as a way to increase their offspring's chances to reach the SKY. [3]

4.4.2 Trick or treat? Private tutoring effects on performance

In order to understand the analysis carried out, it is crucial to point out the remarkable importance of "shadow education" in South Korea, and how social norms affect the perception and use of this parallel education system. In many countries, private tutoring is used as a remedial tool. In others, such as South Korea, private tutoring is believed to boost students' overall achievement, and their College Scholastic Aptitude Test (CSAT) scores (A. Choi et al., 2010; H. Park, Buchmann, Choi, & Merry, 2016). Consequently, participation in private after-school education is believed to increase the chances of being admitted to a highly prestigious university. Yet, research has failed to produce consistent evidence of its positive effects on performance (H. Park et al., 2016). If anything, the results seem to point to rather confusing mechanisms by which private tutoring might be either hampering, boosting, or doing nothing for the academic excellence of Korean pupils.

Some studies point to a significant positive impact of private tutoring in mathematics achievement (H.-J. Park & Lee, 2005) while others report no significant effect (J.-T. Lee et al., 2004). However, endogeneity is a common issue in most research dealing with private tutoring effects. In this vein, academically-oriented or "talented" children could boost parental expectations and investment in private tutoring while, at the same time, parental expectations and investment in private tutoring could foster children's talents and performance. Recent research controlling for issues of endogeneity suggests that there is a significant positive effect of time spent on private tutoring - one or two hours a week - in mathematics (16 points in PISA scores) and to a lower extent in reading (12.5 points in PISA scores), but it does not appear to have a significant effect in science (Á. Choi et al., 2011). However, it is not clear whether those effects would become negative as time spent in private tutoring increases (for example, due to fatigue) or whether other variables such as self-studying would be as effective if children had more resources to boost their own achievements (Á. Choi et al., 2011). In addition, most recent research has found that in Korea private tutoring does have an heterogeneous effect on children's achievement, being those from disadvantaged backgrounds the ones benefiting the most from participating in such academic activity (Y. Choi & Park, 2016). Previous research, however, has often overlooked the dynamic nature of the rational calculus determining its use.

In a survey conducted in 2011 by the Korean Statistical Information Service,[4] South Korean parents were asked to rate on a 5-point scale why they believed that investment in private after-school education has risen in the last decades. The top reasons were the following:

1. College name is critical in getting jobs (4.2 rating).

2. Major entrance system for colleges and special purpose high schools selects students primarily based on grades/scores (4.2 rating).

[3] Korea's top three universities are Seoul National University (public), and Korea and Yonsey Universities (private). The wordplay SKY refers to their initials, and at the same time, to their high position on the prestige hierarchy (Á. Choi et al., 2011).

[4] Data available at KOSIS webpage: kosis.kr

3. Ranking of Colleges considered widely important by public (4.1 rating).
4. Greater expectations on children due to generally more educated parents and the low birth rate (4.0 rating).
5. Private tutoring is so widespread that I feel uncomfortable if my child does not participate (3.7 rating).

The top three reasons rated by parents are related to college prestige and the importance of the CSAT scores to get into a good university. In other words, credentialism. Ergo, parents may be trying to increase their children's chances of reaching the SKY through enrollment in private tutoring. The fourth reason refers to the social changes in South Korean society. Nowadays, a substantial share of South Korean parents has high levels of human capital and they want their children to inherit it. However, the HSEP sets strong boundaries on parental intervention within the formal system, and parents may therefore turn to private tutoring to increase the chances of class maintenance. The last reason for the top-5 ranking is simply "because others do it, so must I". In this manner, the non-enrollment of children may be perceived as a negligence of one's "parental duty" to enhance one's children's opportunities. Parents, therefore, would be facing a Prisoner's Dilemma when deciding whether to invest or not. It is at this point that game theory becomes a useful tool for understanding the decision-making process regarding shadow education participation in South Korea, and to unravel how past performance affect parental choices and investments in education.

4.4.3 A game theory approach to parental choices

According to game theory, any decision-maker chooses the most advantageous action in accordance with their preferences out of the actions available. Their rationality is considered as part of the steadiness of their decisions when confronted with diverse sets of available actions, regardless of the character of their preferences (Osborne, 2004). Game theory also states that there might be a number of equally appealing options, although the action pursued by the decision-maker would be at least as good - in accordance with his/her preferences - as every other available action (Osborne, 2004).

Because not all tertiary degrees are rewarded equally, it is easy to understand why Korean families are willing to implement strategies that will maximize their children's chances of enrolling in a highly selective university (A. Choi et al., 2010). Graduating from a highly selective university is associated with better working conditions such as higher salaries (S. Lee & Brinton, 1996), higher chances of holding decisive positions (Chae, Hong, & Lee, 2004; Kang et al., 2007), and other benefits, such as social status, social capital, and better assortative mating perspectives (S. Lee & Brinton, 1996). In short, it means success. College admission depends on high school transcripts (pupils are ranked along 15 levels) and, mainly, the CSAT score (A. Choi et al., 2010). Due to the HSEP constraints, school choice is almost nonexistent, and parents have no room to foster their children's performance within the formal system. Therefore, they may use shadow education as a way of increasing their offspring's chances of reaching the SKY (Á. Choi et al., 2011).

As regards the subject of this chapter, the decision-makers are the parents since the subjects of analysis are young teenagers, and it is the parents who are investing the money and managing

their childrens' lives. Hence, South Korean parents are confronted with a *"Prisoners' Dilemma"* where they will try to maximize the chances of enrollment into a SKY university, while having perfect information about the preferences of other "decision-makers" - since the "benefits" of attending SKY universities are well known in South Korean society. Taking into account the high competition to get into a SKY institution, and the widespread belief that private tutoring boosts CSAT scores, parents will tend to assume that other parents will invest. Thus, the payoff of the investment will depend on the achievement level of their offspring and the advantages associated with social class, which will lead to a different decision. This point needs further information, as detailed in model 3.

In his seminal paper *Analysis of private tutoring decisions in Korea: A game theory approach*, A. Choi (2010) presents two different game theory models, and the consequential decision-making process derived from them.

In *model 1*, students A and B share the same social class, have similar cognitive abilities, and their schools do not differ one from the other. Facing a Prisoners' Dilemma situation, both students want to maximize their payoff. In order to do that, they must consider the possible strategies of other students in order to make their own. This reasoning leads to an investment, since the only way they can get ahead of each other is to enroll in private after-school tutoring. This decision would produce a sub-optimal Nash equilibrium,[5] where both students enroll in private tutoring. Neither of them will get significantly ahead of the other, although relative risk aversion mechanisms would push both of them to enroll in private after-school education.

In *model 2*, Choi introduces a change: students A and B are from different social classes. In this model, student A has a higher chance of getting into a prestigious university because of his/her higher economic and cultural resources (the so-called primary effects of social origin). Hence, if both families decide not to invest in private after-school education, student A will get into a SKY university. Yet, the equilibrium in this game pressures both families to invest in private tutoring. This is because for student A the optimal strategy is not to invest only if student B does not invest. In contrast, the optimal strategy for student B is to invest and try to catch up with student A. Therefore, if student B tries to catch up, student A must invest in order to maintain his/her initial advantage. As a consequence, student A will invest in private tutoring, and the same happens with student B.

In this manner, model 2 reproduces social inequalities. When everyone invests, the initial advantage is maintained. Yet, if nobody invests, the initial advantage is maintained too. In the context of a non-cooperative game, parents will try to maximize their children's opportunities by investing in private tutoring either as an "insurance" policy or as a "catching-up" strategy (A. Choi et al., 2010).

At this point, it is useful not to lose sight of Lareau's work (Lareau, 2000, 2011); achievement triggers different parental responses depending on social class. Therefore, when analyzing rational choices we must take into account the dynamic nature of these choices and how previous events affect later strategies (H.-P. Blossfeld & Prein, 1998). Parents from diverse social strata will therefore decide to invest in private tutoring following diverse decision-making processes. Because

[5]The Nash equilibrium refers to a steady situation of a system requiring the cooperation of diverse individuals, in which none of the individuals can benefit from a one-sided change of strategy if the other players persist unchanged.

of this reason, in addition to the two models developed by Choi this chapter presents a third one, a multi-agent game in which there are four different type of students instead of two (table 4.1).

Social class	High achiever	Non-high achiever
Upper class	Student A	Student B
Working class	Student C	Student D

Table 4.1: Model 3

In model 3, student A is from the upper social class and a high achiever; student B is also from the upper class but a non-high achiever; student C is a high achiever from a low social class; and finally, student D is a non-high achiever from the working class. In this model, if none of the families invests in private tutoring, then students A and C will succeed and go on to a highly selective university, while students B and D will fail and not enroll in a prestigious university. However, the equilibrium in this game is to invest in private tutoring if the students have either the resources or the cognitive ability to "make it to the top". This means that:

- For *student A*, the optimal strategy is to enroll in private tutoring in order to get ahead of other "students A" and to protect him/herself from "students C". Thanks to his/her high social class, the cost of private tutoring is relatively low, and the risk of not enrolling is thus higher than the relative cost of private tutoring.
- For *student B*, the optimal strategy is also to enroll - assuming that private tutoring has enough remedial effect on his/her performance. The cost of having private tutoring is lower than the risk of not doing it, since his/her privileged social background provides enough resources to manage its price. Therefore, student B will invest to catch up with student A and to protect himself/herself from students C and D.
- Knowing that students A and B will always enroll, for *student C* the optimal strategy will also be to enroll in order not to lose ground on student A and B. Thus, non-upper class parents will invest in private tutoring primarily if their children have the chance to succeed in education. In other words, when they have already "beaten the odds" once.
- Finally, knowing that students A, B, and C will enroll, the rational choice in the case of *student D* is not to enroll. The costs are high - due to his/her low social class - and the prospective gains are low due to the achievement demonstrated thus far.

In short, the rational choice strategy would imply that families will invest in private tutoring if they have either the financial means or their children have proven that they are able to perform at a high level. Yet, do parents behave "rationally"? And, do these investments payoff equally for all social classes?

4.5 Methodology

4.5.1 The Korean Youth Panel Study

The results are the product of longitudinal analysis built on the Korean Youth Panel Survey (KYPS) of 2003-2008. The panel gathers microdata of South Korean pupils lives, as well as socioeconomic

variables, such as parental educational level, parents' occupation, and the use of private tutoring. It also provides information regarding the relative performance of children, in the form of ranks or self-reported achievement in different subjects. The chapter focuses on a national representative sample of middle schoolers.

Because of methodological constraints, the sample has been limited to those individuals who are present in all the waves. Because KYPS is a highly balanced panel, this approach does not suppose a significant reduction of the total sample [6].

4.5.2 Measures of social origins

4.5.2.1 Social origins

The crucial explanatory factor in the analysis is *social origin*, which is measured by two variables: parental education and father's occupation. The former refers to the highest level of education completed by either of the parents. Thus, the variable has four categories (table 4.2): less than high school, high school, junior college, and four-year college or post-graduate studies.

Level of Education	Frequency	%
Less than High School	302	9.26
High School	1436	44.04
Junior college	226	6.93
4 year College/post graduate	1297	39.77

Table 4.2: Parental educational credentials

The *social class* variable has been generated based on the occupational status of the father. There are two main reasons for doing it this way. First, although the mother's occupation is available, there is a huge percentage of missing cases or inactive mothers. Second, occupational status captures the educational credentials needed to perform a specific job, but also the non-cognitive abilities and the monetary rewards associated with it. Thus, social class is considered as the aggregate of similar status occupations (table 4.3).

Social class	Occupation	Frequency	%
Upper class	Legislator, senior officer or manager	485	14.53
	Professionals		
	Technicians and associate professors		
Middle class	Clerks, service workers, and sale workers	1.480	44.35
Working class	Skilled agricultural, forestry, and fishery workers	1.245	37.31
	Craft and related trade workers		
	Plant, machine operators, and assemblers		
	Elementary occupations		
Missing	Soldiers, unemployed, not classifiable	127	3.81

Table 4.3: Social class

[6] In this regard, 87.2% of the sample, both parents and children, responded to all the waves.

4.5.2.2 Educational achievement

Educational achievement has been defined according to the students' position in the ranking within his/her school class. This measure is subject to evident disadvantages. Mostly, it does not take into account the differences between schools, nor between school classes. This is to say, a pupil who is performing at the average level of his/her class might be performing at the same level as another pupil at the top of another class. However, the other available measure of achievement is self-reported performance in diverse school subjects, which is subject to similar bias and limitations than the school class rank position. More precisely, the student's perception of his/her own performance would be biased by the composition of his/her class. In other words, (s)he will report a level of performance relative to one of his/her classmates.

Nevertheless, enrollment in private tutoring should be affected by the perception of the child's performance relative to one of his/her classmates. In other words, parental strategies would be a consequence of the immediate surroundings and not the distant environment. Therefore, it should not matter much if children perform better relative to other schools or classes, because parents do not have information about their children's position at the regional or national level. Between the two measures available, ranking position within the school class has been selected because it appears to be the most objective variable among the available ones. Hence, children are considered top students when they are among the top 10% of their school class ranking, and low achievers when they are among the bottom 20% of their school class ranking.

4.5.2.3 Expectations and aspirations

Parental expectations and children's prestige orientation have been chosen as proxies of preferences. The former refer to the level of education that parents desire their children to attain. The latter is measured as the children's prestige-oriented vision of the occupational structure. Briefly, children have the chance to point out which is the most important factor that they took into account when selecting the occupation they desire the most. Thus, children have been considered as prestige oriented when they answered *"the social prestige that it entitles"* to that question.

4.5.2.4 Enrollment and expenditure in private tutoring

Two measures have been used to analyze private after-school education patterns: whether the student is enrolled or not in private tutoring for mathematics, and expenditure in private tutoring services. Previous research has pointed out that mathematics is the subject in which private tutoring has more positive effects (Á. Choi et al., 2011) and, for this reason, the analysis has been focused on private tutoring for this specific domain.

In order to disentangle how private tutoring impacts a child's position in the school class ranking, the analysis cannot rely on enrollment in private tutoring for just one subject, and the addition of multiple dummies would make the analysis much more complicated. For this reason, *average expenditure in private tutoring* has been used as an explanatory variable. More precisely, the mean expenditure for each social class and level of achievement has been computed, for example the upper class mean investment in low achievers.

4.5.3 Dynamic binary response models: The Wooldridge approach

When implementing dynamic models based on panel data it is crucial to take into account three factors: initial conditions (which is the first observed valued of y in the panel, and is likely not set at "random"); unobserved heterogeneity; and state dependency. In this section I will discuss the Wooldridge approach to address these effects (Wooldridge, 2005) and, more specifically, how the analysis conducted tackles them.

P_{i0} (u_i) is the first observed value of y. Because y_{i0} is not exogenous to individual effects, the *initial conditions* in which the process is observed must be taken into account. As a way of illustration, at the starting point of panel observation an upper-class child is already more likely to be performing at a higher level than a working-class one. However, it is challenging to infer an accurate expression for P_{i0} (u_i) because we do not observe the process under analysis from the beginning. Wooldridge (2005) proposes to *"model the distribution of the unobserved effects conditional on the initial value of any exogenous explanatory variable"* (p.4). Hence, his approach suggests modeling the density of u_i conditional on y_{i0}, x_i.

Secondly, the exploratory analysis of KYPS points to a high persistence and repetition in categorical states. In other words, past experience in a given category is a good predictor of future experience with it. For example, pupils who were in the top 10% of their school class rank in the past are more likely to be in the top 10% of their school class rank in future observations. These results might be driven by two different mechanisms, *state dependence* and *unobserved heterogeneity*. The former implies that experience in a given state modifies behavior in the future, which would make that state more likely to occur. For example, a child in the top 10% of their school class rank would be praised and rewarded because of his/her performance, which in turn would boost his/her motivation and, later on, achievement. The latter implies that individuals differ in their tendency to be in a given state, and the factors explaining these differences prevail over time and are unmeasured. Hence, unobserved heterogeneity will lead to steadiness over time after controlling by all the observable characteristics, even when there is no state dependence.

Following Wooldrige's approach (for more detailed information see Wooldridge, 2005), a random effects probit model with a simple dynamic specification (one lag of the dependent variable) is applied. On those grounds, and as a way of illustration, being in the top 10% of the school class is modeled as a function of whether the individual was in the top 10% of the school the previous year, gender, expenditure on private education, and parental expectations. The individual effect[7] is modeled as a function of the individual's mean values of the aforementioned variables and initial status (whether in the top 10% of the school at the beginning or not) at the start of the panel observations.

The results presented below must be taken with caution. This is because dynamic binary response models are just an approximation that tries to unravel how past events affect future outcomes, by approximating the effects of non-random starting points, state dependency, and unobserved heterogeneity [8].

[7] Because u_i is modeled as a function of individual means and the initial condition, this implies using the same average on these variables (and setting n_i=0).

[8] The coefficients of the regressions are available at the Appendix C.

4.6 Results

4.6.1 Unequal preferences

4.6.1.1 Prestigious aspirations

Previous research has found that families of prestige-oriented children tend to invest more in private tutoring than families of non-prestige oriented children (S. Lee & Shouse, 2011). As table 4.4 displays, as social class increases so does the share of prestige-oriented children. More precisely, the *overall* part of the table summarizes results in terms of person-years, which means that a child from the upper social class is prestige-oriented in 40% of the data, while a child of the working class is prestige-oriented only 27% of the time we have data for. In other words, an upper-class child has prestige-oriented job aspirations for more time than a working-class child. The *between* column repeats the breakdown, but in terms of "children" rather than individuals. This means that 63% of the upper-class children have been prestige oriented at least once, while 53% of the working class and 59% of the middle class have ever been prestige-oriented. Finally, the *within* percent displays the fraction of the time a child has held prestige-oriented expectations; accordingly, conditional on a child ever being prestige-oriented, in 61% of the observations an upper-class child continues as prestige-oriented, while this share diminishes to 50% for a working-class child. Briefly, these results suggest that middle- and working-class children hold rather modest aspirations and are less prestige-oriented than the upper-class children. On top of that, if they ever were, they do not hold such aspirations for as long as upper-class children do.

Social Class	Overall	Between	Within
Upper class	40	63	61
Middle class	34	59	54
Working class	27	53	50

Table 4.4: Prestige orientation in occupation by social class (in %)

Differences in prestige orientation might lead to different school performance. If children do not aspire to succeed they will hardly do it. By contrast, if children aspire to having a prestigious job, they may push themselves and do not quit when they suffer a set back. However, there may be an endogeneity issue in this case. On the one hand, achievement might boost aspirations while, on the other hand, aspirations might foster achievement. Whatever the causal mechanism is, these differences in aspirations are related to the educational choices of South Korean students. At the same time, it might affect private tutoring enrollment patterns and the payoff of after-school academic lessons. Because private tutoring aims to enhance the chances of getting into prestigious universities, families of non-prestige oriented children would have fewer incentives to enroll their offspring in private tutoring.

4.6.1.2 Relative risk aversion and parental expectations

According to game theory, the decision-makers (parents) will choose the most beneficial action in consonance with their preferences, out of the available strategies. Therefore, preferences play a critical role in the game of private tutoring investment. Parental expectations - which are, at the

same time, one of the pulling forces to enroll in private tutoring - have been selected as a proxy to *preferences*.

Relative risk aversion theory claims that parents want their children to do at least as well as they did. In other words, to maintain the *status quo* or experiment with upward social mobility. Thus, success and failure are defined in relation to the family position in the social hierarchy. The analysis of KYPS suggests that, irrespective of their human capital, most parents want their children to pursue tertiary education (see table 4.5). Still, parental ambitions regarding their children's education appear to increase as we move up the Parental Human Capital (PHC) scale.

As in table 4.4, the overall column in table 4.5 summarizes the results in terms of person-years. This means that in 67% of the data available the child of 4-year college-educated parents is expected to pursue 4-year college studies, and in 25% of the data they are expected to pursue post-graduate studies. For the offspring of lower-educated parents, however, expectations are more modest but still quite high. The *between* column repeats the breakdown but this time in terms of children rather than individuals. This is to say, 91% of parents with 4-year college/post-graduate studies want their children to pursue 4-year college studies, and 56% want them to pursue post-graduate studies. This share decreases as parental education diminishes. Yet, a constant pattern emerges: parents want their children to do a bit better than they did - perhaps because class maintenance takes more than it used to. Finally, the *within* column displays the proportion of time the parents hold a specific expectation. Hence, it can be understood as an estimate of stability in a given category. Accordingly, conditional on parents ever having such expectations, in 72% of the observations the 4-year college/post-graduate educated parents expect their children to pursue a 4-year college education. This share rises to 76% for junior college educated parents, and 71% for high school graduate parents. In this regard, 4-year college graduate parents hold post-graduate expectations for their children in 46% of the data available, a proportion that diminishes to 39% for junior college parents and 35% for high school graduate parents.

TABLE 4.5: Parental expectations by parental educational level and achievement. The Republic of Korea (2003-2008)

	High school			Junior College			4-year college			Post graduate		
	Overall	Between	Within	Overall	Between	Within	Overall	Between	Within	Overall	Between	Within
Less than High School	5	15	32	16	46	35	66	95	69	8	28	31
High School	2	8	31	11	35	31	71	96	74	11	33	35
Junior College	1	4	29	5	19	29	76	96	79	16	40	39
4-year college/ Post-graduate	0.5	2	26	3	12	26	67	91	72	25	56	46
	Top achievers											
	High school			Junior College			4-year college			Post graduate		
	Overall	Between	Within	Overall	Between	Within	Overall	Between	Within	Overall	Between	Within
Less than High School	4	7	78	9	15	45	74	98	87	12	13	78
High School	2	2	93	5	8	76	69	76	90	21	25	77
Junior College	-	-	-	4	5	50	60	72	87	34	37	88
4-year college/ Post-graduate	-	-	-	1.28	2.30	57	55	69	83	40	51	76
	Bottom achievers											
	High school			Junior College			4-year college			Post graduate		
	Overall	Between	Within	Overall	Between	Within	Overall	Between	Within	Overall	Between	Within
Less than High School	7	7	71	16	21	75	58	72	85	10	16	67
High School	6	8	68	9	14	62	71	80	89	8	12	71
Junior College	3	2	67	13	16	70	72	78	94	10	14	83
4-year college/ Post-graduate	-	-	-	7	8	75	72	81	90	14	19	75

Because children with different social origins perform at diverse levels in school, the divergences

in expectations might be due to parental reactions to unequal achievement. It is apparent from the results that when children are among the top 10% performers of their school class, parental expectations are high (see table 4.5). However, the pattern found before is reproduced again in the case of high achievers. Hence, there are significant differences among parents of high performers according to social class, and these differences are broader than they were before. Because achievement pulls up expectations regardless of social class, this means that the initial gap keeps its breadth and even broadens it due to the extreme boost that upper-class parental expectations experience. In contrast, when children are among the bottom 20% of their school class rank, parental expectations seem to diminish irrespective of parental human capital. Yet, low-educated parents appear to be more sensitive to failure, and less "boosted" by high achievement than highly-educated parents are. Altogether, the results suggest some sort of interrelation between expectations and achievement, with low-educated parents holding back in greater proportion than highly-educated parents.

Parental expectations are crucial to understanding the decision-making process of whether to invest or not in private education, and if so, how much. Parents will invest if that is the strategy reporting the highest payoff in accordance with their preferences. If they are "content" with relative lower levels of education, then the incentives to invest in private education would diminish in line with this.

4.6.1.3 Unequal investment

We have seen that parents hold different expectations depending on their own human capital and their children's performance. Results also suggest that low-educated parents are more sensitive to their children's performance than highly-educated ones. Figure 4.1 shows an overview of how much money parents invest in their children's private education (per ten thousand Korean wons) by children's occupational prestige orientation, parental expectations, and achievement level (all results are displayed by social class[9]).

The average investment in private tutoring seems to be persistently higher for the upper social class than for any other social class. However, the gap between social groups widens or shrinks depending on other variables. The narrowest gap between social classes is found when parents have low expectations regarding their children's education, this is to say, when they expect their children to make it only to junior college. Because shadow education in South Korea is aimed at fostering CSAT scores, the investment in after-school private tutoring only makes sense if parents expect children to go to upper-tier universities. The investment "pattern" found is hence consistent with this assumption. In contrast, the widest gap between the social classes is found among high achievers and prestige-oriented children. Again, this pattern points to the use of private tutoring as a boosting rather than a remedial tool. Hence, upper-class parents with high-achieving or prestige-oriented children, are the ones spending the most on their offspring's after-school education. As we move down the social hierarchy this investment decreases, although parental

[9]Here social class refers to the occupational position of the father. The use of this variable instead of parental education has its origin in the necessity to take into account the household financial resources that might be affecting affect the affordability of private tutoring. While education might better reflect aspirations and expectations, it does not necessarily translate into affordability of educational goods. For more information regarding the construction of this variable, please see the methodological section of the chapter.

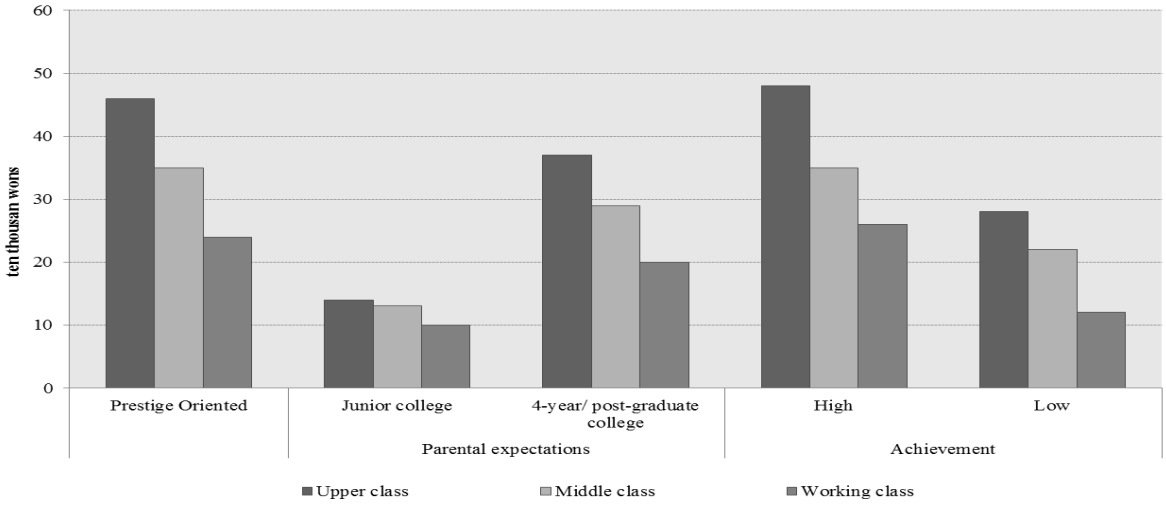

Figure 4.1: Investment in private tutoring (in ten thousand wons) by social class, preferences, and achievement level (in %).

investment in high achievers is always greater than for low achievers. The investment disparities among parents with high performers could be a product of the dissimilar financial assets between social classes, rather than the result of deliberate parental strategies because, they are the ones - among the least advantaged parents - who invest the most.

In any case, working-class parents tend to invest more in private education when their children succeed or hold high aspirations. In other words, when they can or wish to succeed against the odds. In contrast, working-class parents invest the least when they expect their children to reach just junior college, or their children are low achievers. The economic burden of private tutoring supposes a great cost for the lower social classes, and investment may therefore only be made when children can make good use of it. The middle class seems to follow the same patterns as the upper class, and spends the most when their children are prestige-oriented or high achievers.

In brief, these results suggest that, regardless of social class, parents tend to decide whether to invest or not mainly based on expectations and aspirations but especially on their off-spring's achievement. Choices, therefore, seem to be dependent on achievement. In the next section, a dynamic discrete choice model aiming to shed light on how preferences and achievement may affect enrollment in mathematics private education is conducted.

4.6.2 Unequal chances

Previous research has pointed out that the most "successful" private tutoring is that which focuses on mathematics (Á. Choi et al., 2011); the analysis in this section therefore tackles enrollment in private tutoring for that specific subject. In doing so, it aims to pinpoint those enrollment patterns in the subject that seem to payoff the most. At the same time, educational choices - such as private tutoring enrollment - are understood as a dynamic process of adjustment to past performance and expected probabilities of success. It is for this reason that previous achievement is taken into account when analyzing participation in private tutoring for mathematics.

Hence, "participation in private tutoring for mathematics" is modeled as a function of whether

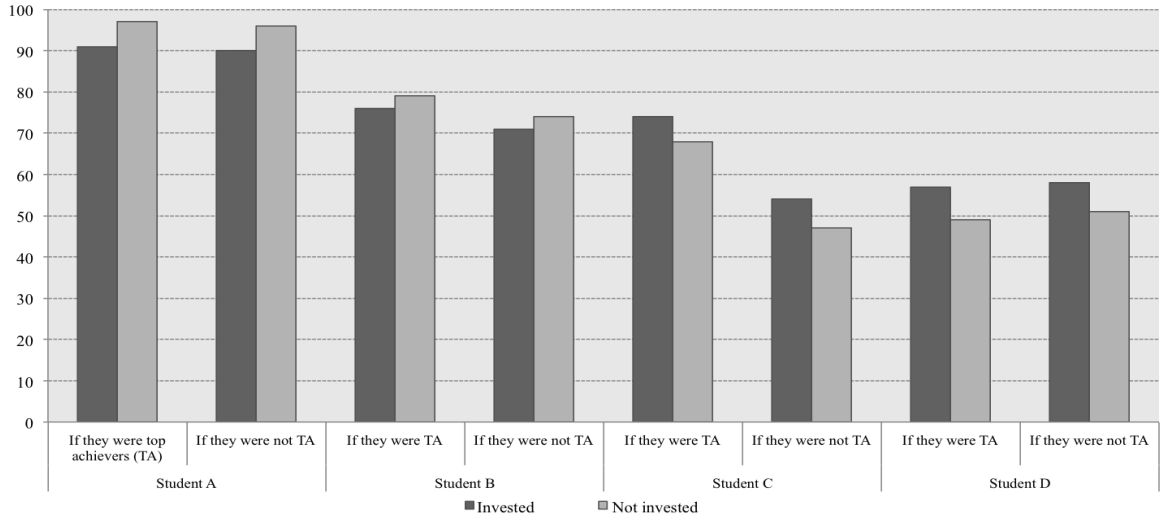

Figure 4.2: Probability of being enrolled in mathematics private tutoring depending of whether the student was performing at the top 10% of their class or not, and previous investment in mathematics private tutoring. A dynamic probit random effects approach.

the student participated last year (lagged variable), gender, achievement, prestige orientation, and parental expectations. Because children are not observed since the beginning of their lives, and their achievement at the starting point of the observation is not set at random, the analysis includes a variable to control for the starting point. In addition, the individual effect is modeled as a function of the individuals' mean achievement, prestige orientation, parental expectations, and past private tutoring participation (a lagged variable).

Because families might invest differently due to diverse preferences and aspirations, the predicted probabilities are computed setting prestige orientation and parental expectations to their highest level (4-year college or postgraduate studies). Figure 4.2 presents the predicted probabilities for students A, B, C and D (whose characteristics are presented in model 3 in subsection 4.3.3 and the model of which is in the appendix D, figure AD1) taking into account previous achievement and investment in Private Tutoring for Mathematics (PT-M).

As expected, students A, B, and C are the most likely to enroll in PT-M. Nevertheless, there are interesting patterns emerging. Firstly, student A appears to have the highest chance for enrolling in PT-M. In this manner, an upper social class child who is in the top 10% of his/her school class has over a 90% probability of being enrolled in PT-M, regardless of his/her previous achievement level and enrollment participation. Student B - this is an upper class child who is not currently performing in the top 10% of his/her school class rank - seems to be less likely to enroll in private PT-M than student A. Still, student B has higher probabilities of enrolling in PT-M than student C and D. Furthermore, if student B used to be in the top 10% of his/her school class - even if (s)he is not currently performing at such level - the likelihood of being enrolled in private tutoring is slightly higher than if (s)he[10] was not. Still, upper-class parents do not seem to be very sensitive to past or present performance, and would rather opt for enrollment.

The results also suggest that working-class students - students C and D - are less likely to

[10]The predicted probabilities have been computed for both genders, but there were no substantial or significant differences between them. To simplify the analysis, gender was set at its "mean".

be enrolled in PT-M than their upper-class counterparts. It is important to note, however, that achievement appears to boost the likelihood of being enrolled in PT-M. In this manner, a working-class child in the top 10% of his/her school class rank (student C) is as likely as an upper class non-top student (student B) of being enrolled in PT-M. Having said that, (s)he is less likely to be enrolled than an upper-class child in the top 10% of his/her school class (this would be student A). At the same time, working-class parents seem to be skeptical and more sensitive to previous performance. Thus, if student C was not in the top 10% of his/her school class before - even if (s)he is at the current time - (s)he is as likely to enroll in PT-M as a child from the working class who never "made it". These results suggest that stability in the top 10% of the school class boosts the probability of being enrolled in PT-M for working-class children, but "performing against the odds" once does not necessarily mean that parents will perceive that the investment is "worth it". In short, the results indicate that while a working-class student must persistently "beat the odds" in order to influence the rational calculus behind investment in PT-M, an upper-class pupil does not.

4.6.3 They are making it!

So far, we have seen evidence with regard to PT-M enrolment patterns for different types of students. Still, we do not know whether enrolment and investment in private tutoring has the desired effects for students' A, B, C, and D. Hence, does expenditure in private tutoring affect the educational performance of students? The answer is: it depends. Primarily, it depends on how much parents invest and on previous performance.

	Investing at their mean in PT-M		Not investing in PT-M	
	Female	Male	Female	Male
Student A	49	53	41	44
Student B	7	8	5	5
Student C	43	45	39	41
Student D	6	5	5	5

Table 4.5: Probabilities of success (in %) in their strategy of either *protecting themselves* (student A and C) or *catching up* with high achievers (students B and D) by gender.

Table 4.6 shows the predicted probabilities of success in their "rational choice" for students A, B, C and D (the model from which the probabilities have been computed is in appendix D, figure AD2). The table also shows the predicted probabilities for each type of student in case their parents do not invest in PT-M. In the case of Student A it shows the chances that (s)he has of "protecting him/herself" and persisting in the top 10% of his/her school class rank if his/her parents invest as much as other upper-class parents with high achievers. A female student A, hence, has a 49% chance of persisting as a top 10% performer if her parents invest in private tutoring in the same way as the average upper-class parent with a high achiever. Moreover, a high-achieving boy is slightly more likely to succeed and persist at the top of their school class rank (a 53% chance) than a girl. In contrast, if parents do not invest in PT-M the chances of persisting at the top diminish for both genders (down to 41% for females, and 44% for males)

For student B, however, table 4.6 shows their likelihood of *catching up* and making it to the top 10% of his/her school class rank. In other words, it shows the "remedial" effect of private tutoring

if upper-class parents invest as much as other upper-class parents do in their non-high achievers. As the results in table 4.6 show, the likelihood of catching up and making it to the top of the school class rank is rather low and does not even reach 10%. Therefore, although investing in private tutoring would be a rational choice, we can say that this strategy would have rather low chances of producing the desired results, especially if we take into account the small gain from not investing at all (just a 1% increase in the likelihood for girls and no effect for boys).

For student C - a working-class high performer - the likelihood of persisting in the top 10% of his/her school class rank if his/her parents invest as much as the average working-class parent, is quite close to the likelihood of student A. Besides, we must keep in mind that working-class parents tend to invest less in their high achievers than upper-class parents do. Therefore, the "average" investment is lower. Nevertheless, a working class high-achieving girl has a 43% probability of persisting in her high achievement, while a working-class boy has a slightly higher chance (45%). Whereas the increase in the likelihood of persisting at the top-10% of their class is not very substantial (just a 4% raise for both genders from the case scenario in which parents do not invest at all) we must take into account that the investment for working class children is much lower than in the case of upper-class families. The data in table 4.7 could be of more help to understand the impact of investment in working class children, as it shows that when the investment is similar to upper-class, the chances are pretty similar too.

For student D - a working class non-high achiever - the probability of *catching up* and make it to the top 10% of their school class rank - if their parents invest as the average working class parent with non-high achiever - are even lower than in the case of student B. In the student D case, however, a girl appears to be slightly more likely (she has a 6% chance) to catch up than a boy (who has a 5% chance). As a matter of fact, the improvement on the likelihood of catching up is of 1% for girls, and there is no improvement in boys' chances. Briefly, the rational choice of not investing seems to be the most adequate due to the small remedial effect that private tutoring has in the performance of working class non-high achievers.

In sum, we can see that the rational choice does not always lead to the desired reward. Due to relative risk aversion, upper-class parents tend to make the highest level of investment in private tutoring, regardless of the achievement level of their children. Nonetheless, the investment only has the desired payoff for the parents of high achievers. As we have seen before, working-class parents appear to be more sensitive to failure, still, their high-achieving offspring appear to benefit from private tutoring. This higher "sensitivity" may affect the chances that working class children have of reaching the SKY, because the lack of investment would imply an increase in the gap between them and the upper-class high achievers. These conclusions are further supported by the data displayed in table 4.7, where the probabilities for different types of students have been computed by simulating different levels of parental investment (the model from which the probabilities have been computed is in appendix D, figure AD2).

Table 4.7 shows the predicted probabilities (in %) of performing in the top 10% of the school class rank for the children of the upper and working class, by gender and level of investment in private tutoring (setting expectations and aspirations at their highest level). If we turn our attention to the upper class, we can see that a boy is slightly more likely to be stable at the top of the school class ranking than a girl (around 3% more) regardless of the parental investment level in private tutoring. However, if they were not at the top of the school class ranking, the likelihood

		They were top achievers		They were not top achievers	
	Investment	Female	Male	Female	Male
Upper class	like Middle Class	47	50	7	6
	Its mean	49	53	7	8
	no investment in PT	41	44	5	5
Working class	like upper class	46	48	7	8
	like middle class	44	46	6	7
	its mean	43	45	6	5
	no investment in PT	39	41	5	5

Table 4.6: Likelihood (in %) of performing at the top 10% of the school class rank by previous performance, gender and level of investment in private tutoring.

of making it to the top 10% is quite similar and low for both genders (does not even reach a 10% chance). If parents decide on as much investment as the mean upper-class parent - according to the achievement level of the child - the payoff would be around an 8% rise in the probability of persisting in the top 10% of his/her school class rank (from 41% to 49% for a female, and from 44% to 53% for a male). In other words, investment in private tutoring has a rather substantial boosting effect for the upper class. In contrast, the effect of private tutoring is pretty low or nonexistent for those who were not top achievers - this would be our student B. In this case, the "boosting" effect would be around 3% to the chance of making it to the top 10% for both genders.

As previously stated, when presenting the likelihood of the different "types" of students, the effect of private tutoring appears to be similar for working-class and upper-class children. In other words, a high performing working-class child is as likely to persist at the top of his/her school class rank as an upper class child if his/her parents invest in him/her as much as the parents of an upper-class high achiever do (the chances are 46% for a working-class child and 49% for an upper-class child). If, instead, the working-class parents invest as much as an average working-class parent with a high performer, the likelihood of persisting in the top 10% is moderate, but does not substantially diminish (43% for a female and 45% for a male). If parents decide to not invest at all, however, then a top achiever from the working class has just a 39% chance of persisting at the top. Thus, a working-class child makes as good a use of private tutoring as does an upper-class child, although their parents tend to invest less in them, perhaps due to budget constraints and high levels of uncertainty.

There is also a consistent pattern over different levels of investment: the gap between the working and upper class on the likelihood of performing in the top 10% is kept at around 3%. Thus, even when working-class parents invest at the same level as those of the upper class, inequalities seem to persist, although at a lower level. In this vein, student C would almost catch up with student A and, although the gap still exists, it is no longer substantial. If we turn our attention to the case of a working-class student who was not at the top of his/her school rank, we can see that the chances of making it to the top 10% are rather low, but they do not significantly differ from those of the upper class. Thus, at a maximum, a child will increase the likelihood of making it by 2% - 3%, depending on gender.

Although shadow education in South Korea is mainly used as an educational boosting tool, it might also be useful as a remedial instrument. Previous research has already pointed out

		They were low achievers		They were not low achievers	
	Investment	Female	Male	Female	Male
Upper class	like Middle Class	16	22	1	2
	Its mean	16	22	1	2
	no investment in PT	15	20	1	2
Working class	like upper class	32	37	2	3
	like middle class	33	37	3	4
	its mean	34	39	3	4
	no investment in PT	37	43	3	4

Table 4.7: Likelihood (in %) of performing at the bottom 20% of the school class rank by previous performance, gender and level of investment in private tutoring.

that parents from the middle and upper class tend to engage the most when their children have difficulties at school (Lareau, 2000, 2011). Since there is little room to help children within the system, does private tutoring in Korea help in recovering from a set back? And if so, does this effect vary between social classes or genders? The answer, yet again, is it depends. It mainly depends on social class and level of investment.

From the results presented in table 4.8 we can infer that there are striking differences in the likelihood of persisting as a low performer by social class (the model from which the probabilities have been computed is in appendix D, figure AD3). Firstly, a working-class child who was performing in the bottom 20% of his/her school class is much more likely to continue as a bottom performer than an upper-class child. Hence, whereas the likelihood of continuing as a low achiever is around 16% for an upper-class female and 20% for a male, the probability increases to 30% and 35% - respectively - for working-class children. Secondly, the investment in private tutoring would have a remedial effect for a working-class bottom achiever, but this effect is only substantial if parents invest at the same level as upper-class parents with bottom performers. In other words, when working-class parents with bottom performers make a huge investment in private tutoring, the likelihood of persisting as a bottom achiever diminishes by 7% for a female and 6% for a male. Yet, taking into account the low investment that parents make in low achievers, this "simulation" would hardly mirror the reality. If working-class parents invest at their mean level, the "rescue effect" would be around 4% for both genders. At the same time, there seems to be a redeeming effect linked to upper social class membership, but the effect does not appear to work through investment in private tutoring. Thirdly, these results suggest that there are gender differences in persisting as a bottom performer. In this manner, a male is more likely to persist at the bottom of his school class than a female. Finally, the likelihood of falling into the bottom level of performance - if the child was not a low achiever before - is rather low for all social classes, but slightly higher for a working-class student than for an upper-class child. Hence, it seems that the perks of being upper class and not having private tutoring prevent these children from falling too hard.

4.7 Discussion

Despite its great contribution to IEO research, Boudon's work neglected the analysis of how educational performance triggers different parental responses. Parental strategies are dynamic

and adapt to their children's needs and talents. The literature on the compensatory effects of social origins highlights how upper-class parents are better able to save their children after a false step (Bernardi, 2012; Bernardi & Boado, 2013), but it has overlooked how working-class families try to compensate for humble origins when their children are high achievers. As Lareau's research indicated (Lareau, 2000, 2011) and the results of the chapter suggest, it is important to take into account the dynamic and adaptive nature of parental strategies. These strategies appear to be rational but do not always lead to the desired results. Hence, while it is true that there is a "compensatory" effect, it is worth noting that this effect is not exclusive to the upper class.

The results presented in this chapter appear to support the dynamic rational choice approach that it takes. More precisely, the game theory approach seems to be especially efficient for understanding the decision-making process that drives enrollment in private tutoring. If we focus on the students in the top 10% of their school class rank, for the working-class student - student C - it makes sense to invest in private tutoring, particularly if they invest as much as their upper-class counterparts. If they invest as much as their average working-class counterparts, the boosting effect is still meaningful but not as substantial. At the same time, the rational choice for the upper-class top 10% performer - student A - would be to enroll in private tutoring as an "insurance policy". This is because, if student C invests in private tutoring, student A would lose ground in relation to him/her and (s)he may therefore not reach the SKY. Moreover, student A would also lose ground with respect to other students A who are investing. Hence, the most rational choice is to invest. For non-top - but still non-bottom - achievers, regardless of their social class, investment does not make much sense, considering that the catch up effect is rather low and does not seem to be enough to reach the SKY. If instead we focus on students in the bottom 20% of their school class rank, investment is the most rational choice for the working classes. They are the ones who private tutoring appears to rescue from "drowning" the most. For the upper class, however, private tutoring does not appear to have a substantial effect, and the redeeming effect of class is enough to prevent them from failing too hard. In sum, investment in private tutoring does not payoff the same for all social classes and levels of achievement.

The most interesting result, however, is that children's performance seems to trigger parental responses, but it especially seems to prompt working-class parents to act. However, the underdog (student C) has to beat the odds in a constant manner in order to prove their cognitive abilities, and diminish the uncertainty regarding the future rewards of investment. Only then do working-class parents appear to steadily invest in private tutoring. This finding suggests that relative risk aversion mechanisms might be driving working-class parental choices and behavior in South Korea, and that parents try to compensate for humble origins if their children prove that they can make it despite their underprivileged social origins. The upper-class children, in contrast, do not need to prove their "worth" in order to prompt parental investments. It is true, however, that the higher the achievement, then the higher the chances of enrollment, and the higher the average investment in private tutoring. Still, upper-class parents always invest more in their children than working-class parents, which seems to point to a pattern of overall parental involvement. Yet, these patterns of investment are not the mechanism that redeems them from a false step in education.

With respect to gender differences females lag slightly behind their male counterparts and have fewer chances of making it to the top of their school class. At the same time, they seem to be protected from falling into the bottom performance. Thus, there are no substantial differences at

the top, but there is a meaningful gap between females and males at the bottom of the distribution, the former being the least likely to either fall or persist as bottom performers.

Last but not least, dynamic binary response models are an approximation for trying to disentangle how past events affect future outcomes by, simultaneously, estimating the effects of non-random starting points, state dependency, and unobserved heterogeneity. Nonetheless, the statistical approach could be much more accurate with the use of longitudinal data that provides more observation points, although, unfortunately, such data is not yet available in South Korea. That being said, the results and method so far constitute a first step to understanding the dynamics of privilege in education. To deepen our knowledge about how performance triggers different parental responses, and whether there is such a thing as the 1.5 effects of social origins in education, it would be necessary to test these findings using data from much less restrictive systems and, perhaps, more heterogeneous societies. Because, when privilege has no limits and many sources, the SKY is much closer.

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CHAPTER 5

LADIES AND GENTLEMEN: GENDERED PRIVILEGE IN THE FEDERAL REPUBLIC OF GERMANY

This chapter comprises the empirical analysis of how the intersection of gender and social origin (dis)advantages affect the performance of children in different domains. In this regard, gender is a social construct based on biological markers, just like ethnicity, and it certainly conveys particular privileges. Simultaneously, privileged social origins boost children's achievement school, while lower class live conditions may hamper their capacity to perform in different domains. Both factors - gender and social origins - may add and boost children's achievement. Yet, what happens when privilege meets disadvantage? Does the intersection of both factors alter the (dis)advantages associated to them? To answer these questions, the chapter explores the state of the gender gap in different domains and academic tracks, using a selected sample from Starting cohort grade 5 of the the National Educational Panel Study of Germany.

5.1 Introduction

Capacity has no gender. When boys and girls have equal opportunities both genders have equal chances of performing at the highest level (OECD, 2015). Nonetheless, while girls tend to outperform boys in reading, boys appear to outperform girls in mathematics, and no significant differences are found in science (OECD, 2015). Simultaneously, the children of the upper class tend to outperform the children of the lower social class in any country of the world, regardless of the subject under analysis (OECD, 2012a). Gender and class, therefore, are two sources of (dis)advantage that affect the ability of children to achieve in school. The aforementioned differences in performance are the product of social artifacts rather than innate capabilities. If boys and girls have equal capacities to perform in different subjects, then, why do they fail to do so? There is no clear answer, but there are several partial explanations.

Firstly, gender is a social construct built upon biological markers. The manner in which families and society treats boys and girls from the very beginning of their lives molds their demeanor, the way they think of themselves, and how they interact with the world. Attributes categorized

as masculine such as boldness, determination, or eagerness for risky behavior, have a negative effect on the school experience of boys. Feminine characteristics such as being gentle, modest and moderate, in contrast, are school-friendly conducts that enhance the school experience of girls. Hence, whereas gender roles hinder boys' educational opportunities, they foster girls' educational experience.

Secondly, gender identities are molded by social class norms. For example, the typical "macho" way of behaving is considered as a rather lower-class conduct, and, consequently, it is rejected by the most advantaged social groups (S. R. Khan, 2010b). In point of fact, the upper-class conception of masculinity comprises school-friendly values such as self-assertiveness, leadership, confidence, and determination (S. R. Khan, 2010b). That being the case, the sons of the upper class will try to compel through their masculinity by means of outstanding educational achievement and engagement in leadership roles. To sum up, the upper-class understanding of masculinity could act as a vaccine against hindering masculine stereotypes, thereby enhancing the educational performance of upper-class boys. Consequently, we could infer that the intersection of gender and social origins should have an effect on the capacity of children to perform in education.

Finally, not only are individuals gendered, but subjects are too. Mathematics has long been considered as a masculine field in which boys are expected to outperform girls. Languages, per contra, are a feminine discipline in which girls are believed to be better than boys. The categorization of subjects as feminine or masculine affects the self-conception and confidence that both genders have in their capacities to perform in such domains. Indeed, previous research has pointed out that performance in a field is hampered when individuals distinguish themselves as part of a social group that is negatively stereotyped in that area (Ambady et al., 2001; Shih et al., 2002, 1999; Shih, Pittinsky, & Trahan, 2006; Spencer et al., 1999; Steele & Aronson, 1995). Likewise, performance in a subject is boosted when individuals perceive that a social group to which they are part of is positively stereotyped in that domain (Ambady et al., 2001; Shih et al., 2002, 2006). Hence, boys' performance in mathematics would be perked up because they are part of a positively stereotyped group. Girls' performance in mathematics, however, will be hindered because they belong to a social group that is negatively stereotyped. The opposite would happen as regards language subjects. However, individual's identities lie on multiple pillars and gender is just one of them. To the subject-specific advantages that gender carries, some individuals will add the perks of being from the upper class, while others will suffer the double burden of a disadvantaged class and a negatively-stereotyped gender. Yet, do gendered advantages add to the perks of class privilege? Or does the benefit of being upper class fade when it collides with gender boundaries? In other words, does the intersection of gender and class (dis)advantages affect the educational performance of children?

In brief, this chapter aims to shed light on the intersection of gender and social origins in Germany, and its role in the emergence of gender gaps in different domains such as mathematics and German. My theory argues that gender - and, more precisely, gender stereotypes - intersects with social origins thus creating inequalities of educational opportunities for the sons and daughters of social class. In this regard, some children will see their gendered "privilege" as a complement to their social class advantage, while others will see their gender advantage reduced when it comes into collision with the hindering effects of limited resources.

5.2 The puzzle

In essence, the main intend of the chapter is to unravel to what extent the intersection of gender and social origins contributes to the emergence of an achievement gap in mathematics and language. In other words, it is an attempt to identify the extent to which gender and class (dis)advantages have a complementary or damaging effect in the performance that children display in different domains. In this manner, it tries to obtain an answer for the following questions.

1. Is the advantage associated to social origins resilient to the disadvantage of a negatively stereotyped gender?

2. Do the disadvantages linked to lower social origins add to the burden of a negatively stereotyped gender?

3. In sum, to what extend gender and social origin (dis)advantages intersect to have a complementary/damaging effect in the capacity of children to perform in different domains?

In order to answer the aforementioned questions, a sample of individuals from the Starting Cohort Grade 5 of the National Educational Panel Study (NEPS) of Germany has been selected. Most of the dependent variables are related to achievement and performance in school. First, the analysis focus on how likely children are to be recommended to different high school tracks, depending on their Parental Human Capital (PHC) and their gender. Then, the chapter shows the chances of being a top performer in German and Mathematics for children that are in the most prestigious school track (Gymnasium). Finally, the chapter analyzes the chances that children have of being identified as having special needs, depending on their gender and social origins. All in all, the chapter takes a glance at the probabilities of success and failure in the German educational system for boys and girls of different social origins, and tries to establish the basis to better understand how the intersection of gender and social origins affect the chances that children have in different educational domains.

5.3 Theoretical Background

5.3.1 The state of the gap

The expansion of education systems in the 20th century has brought in children from disadvantaged social backgrounds as well as other groups long left out of formal education, such as ethnic minorities and women. Since the early 1900s the number of years spent in education across OECD countries has doubled for both genders (OECD, 2015). Still, women have experienced the most dramatic increase in average years spent at school, to a point at which they have reversed the educational attainment trend that used to favor men (Buchmann & DiPrete, 2006; DiPrete & Buchmann, 2013; OECD, 2015). Women have not only surpassed men in educational attainment but they also have made headway into some educational pathways that were, traditionally, men's domains, such as vocational and pre-vocational studies (OECD, 2015).

Boys and girls perform at a different level in school. However, gender disparities in educational achievement tend to favor one or the other depending on the way performance is measured

(Lafontaine & Monseur, 2009; Mullis, Martin, Fierros, Goldberg, & Stemler, 2000; Ward & Bennett, 2012). While school grades tend to favors girls, standardized tests appear to benefit boys. This could be because grades include an assessment of performance and behavior in class. Since boys tend to engage in more disruptive behaviors, teachers would penalize boys' grades. Standardized tests, however, assess academic skills net of behavioral penalty, which would benefit boys. In addition, previous studies have found that whereas open questions favor girls, short answer questions benefit boys (Lafontaine & Monseur, 2009). Finally, girls tend to outperform boys in reading, while boys tend to outperform girls in mathematics, and no significant differences are found in sciences or problem-solving skills (OECD, 2015). In fact, the differences in performance by types of question could be the result of dissimilar skills in language by gender. In other words, since girls tend to be better at language subjects, they are better at exposing their reasoning in open questions. Boys, per contra, appear to be better at "mathematical thinking" which could be related to the ability to respond to short answer questions. One might think that these inequalities are the product of biological and cognitive abilities, yet the size of the gap is different across countries, which suggests that these differences are not innate.

The likelihood of being an "all-rounder" - a student who scores at the PISA proficiency level 5 or 6 in the three fields assessed (mathematics, reading, and science) - is the same for boys and girls across all the participating countries (OECD, 2015). More precisely, 4% of both boys and girls are all-rounders. We could hence infer that educational success has no gender and that once children have the same opportunities both boys and girls are equally able to excel in all subjects. There are, however, striking gender differences among the bottom performers. On the one hand, the share of girls who perform poorly in mathematics is slightly larger than that of boys (OECD, 2015). On the other hand, the proportion of boys that do not reach the baseline level of proficiency in any of the aforementioned subjects is larger than the share of girls who fail to do so (OECD, 2015). More precisely, across OECD countries six out of ten students who are bottom achievers in all the aforementioned subjects are boys (OECD, 2015). In Germany, approximately 10% of boys are low achievers in all subjects, while the proportion diminishes to 7% for girls. This gender gap is among the lowest of the OECD (OECD, 2015)[1]. Disparities in the share of children who fail to make the baseline in all three subjects is especially worrying. Students who fail in all the core domains are more likely to build identities in opposition to school, and engage in disruptive and risky behaviors, than to make the extra effort that recovery from such a low performance involves. Since there are more boys than girls in such a situation, the hindering effects of a masculine identity may add to the construction of identities that are hostile towards school. These negative effects would be especially high in disadvantaged environments, due to the accumulation of masculine hindering identities, the exposure to the perils of poverty, failure in school, and the lack of resources to overcome the difficulties.

There are, however, spheres in which girls still lag behind boys. While 39% of males who

[1]One may wonder why to select Germany as a case study if the gender gap is among the lowest of the OECD. The first reason is data availability, since NEPS provides with a great sample of schoolers and their performance both in mathematics and German. The second reason is that, if even in one of the OECD countries with the smallest gender gap I am able to find that gender and social origins intersect thus creating different the educational chances for children in different domains, it should be fair to assume that this effect may be even higher in countries with greater gender and social gaps. Hence, by analyzing the gap in one of the most "ideal" case scenario I set high stakes for the (dis)advantage to happen.

entered university for the first time chose science-related fields of study in 2012, only 14% of their female counterparts did. Graduates from Science, Technology, Engineering and Math (STEM) fields are in high demand in the labor market, while jobs in these fields are among the most highly paid (OECD, 2015). Consequently, the extreme under-representation of women in these fields of study is translated into lower access to highly paid jobs in the labor market.

Disparities in educational achievement by subject and type of question have led to the belief that boys and girls have innate abilities in different core subjects. Whereas boys are believed to be especially good at mathematics, girls are perceived as outstanding in languages. These widespread beliefs may affect the capacity of children to perform in different core subjects. In other words, gender stereotypes regarding core domains may lead to a "gendered performance". In this manner, gender may convey (dis)advantages depending on the domain under analysis. Yet, to what extent are these differences products of nature and nurture?

5.3.2 Inequalities of educational opportunities: is it nature?

Traditionally, girls have performed better in school and obtained higher grades than boys (DiPrete & Buchmann, 2013). Simultaneously, the children of the upper class tend to outperform the children of the lower classes in any country of the world (OECD, 2012a). Scholars tend to point to either biological determinants, cultural explanations or disparities in assets as the main causes of the achievement gap between genders and social groups.

The "nature" theory understands differences in achievement as a product of biological factors. Indeed, it is undeniable that biology plays a role in the acquisition of abilities. Sex is a biological marker and, as such, it affects the human anatomy and the configuration of individuals. In fact, brain and cognitive development are different between sexes. For example, males have better visual-spatial abilities than females, and women appear to be better at language processing than men (Halpern & LaMay, 2000). These disparities may affect the learning process and achievement in academic domains, such as mathematics and language. Therefore, biological divergences between the sexes could be the cause of disparities in performance. However, biological determinism fails to explain the great cross-country variation of the gender achievement gap. In other words, whereas biological factors may certainly have an effect on brain development and cognitive processes, sex determinants are similar across countries, and, consequently, they cannot account for the variation between them.

Regarding social class differences in achievement, the nature hypothesis suggests that genetic inheritance from parents to children is at the core of the reproduction of academic achievement through generations. Biology, it is believed, has a crucial role in capabilities. Sibling studies have pointed out that around 50% to 70% of IQ is inherited from parents to children (Freese, 2008; Sacerdote, 2010). It is also well known, however, that IQ is not the unique determinant of educational achievement. As a way of illustration, empirical studies have found that the children of the upper class are more likely than the children of the lower classes to recover from a false step in education (Bernardi, 2012; Bernardi & Boado, 2013). This academic recovery is not due to their higher cognitive capacities, but because upper-class parents can afford to "rescue" their children after a setback by, for example, investing in remedial lessons. Hence, while there may be a tremendous degree of IQ legacy, this inheritance cannot account for all the variance in educational

achievement between social groups.

5.3.3 Or is it nurture?

Despite the evident role of biology, a large part of the Inequalities of Educational Opportunities (IEO) puzzle remains unexplained after taking into account biological determinants. Hence, socioeconomic factors may be at the core of the unidentified mechanisms driving IEO. In other words, children from different social classes do not perform at a different level in school because they are genetically predisposed to doing so, but because they are exposed to different living conditions that affect their capacity to perform in school. Simultaneously, gender stereotypes affect the socialization process and the self-conception of children, ultimately determining their capacity to achieve in certain domains(Ambady et al., 2001; Shih et al., 2002, 1999, 2006; Spencer et al., 1999). Consequently, nurture rather than nature would be at the core of IEO.

Disparities in *financial resources* are translated in IEO via different living conditions early in life. In this regard, upper-class parents can provide their children with better nutrition, health care, and childcare than lower-class parents. These better living conditions boost the cognitive development of upper-class children. Therefore, while upper-class children have a head start in life, the cognitive development of the lower classes is constrained by the lack of financial resources. The household economic assets also affect the cognitive development of children though direct investments in educational goods, such as enrichment or remedial classes, extracurricular activities, and availability of books at home.

Economic assets are a crucial yet not the exclusive source leading to IEO. Parents from different social origins display different nurturing practices, which fosters dissimilar non-cognitive characteristics among their offspring. In her seminal work, Lareau (Lareau, 2000, 2011) pointed out that while the parents of the upper class engage in the *"concerted cultivation"* of their children's talents and the remediation of their educational needs, the parents of the lower social classes struggle to cover the basic needs of their children. This struggle governs their nurturing practices due to the lack of economic resources but, mostly, due to the lack of time. Although Lareau did not find substantial differences in the intensity and style of nurturing parental practices by the gender of the child, gender does, nonetheless, play a crucial role. This is because the parental investments in "cultivating" practices are biased by the gender of the child. In other words, parents pursue the fostering of their offspring's skills but they tend to do it in consonance with mainstream gender roles. Therefore, they will engage their children in activities that simultaneously promote their talents, tackle their needs, and socialize them in their gender stereotypes. As a way of illustration, boys will participate in different kinds of extracurricular activities from girls, and these activities will foster different non-cognitive abilities for both. In addition, these nurturing practices would reinforce gender stereotypes, which in turn affect the capacity of children to perform in specific domains.

The dissimilar nurturing practices by social origins could be the product of unequal Parental Human Capital (PHC). The upper class tends to have high levels of *human capital*, and they therefore possess a better understanding of how the education system works. Because of this, they are able to help their children to navigate through the boundaries of the system. They know when and where to invest, which educational paths are worth following and which ones

are not. Knowledge thereby leads to efficacy in educational investments and, later on, to success in education. Nevertheless, educational segregation by fields of study and the categorization of domains as "feminine" or "masculine" may constrain the ability of parents to help their sons and daughters. On the one hand, the share of women in STEM fields of work is much lower than the share of men, and, because of this, girls have fewer role models to encourage them to pursue those careers. On the other hand, even when boys and girls show similar ability in a domain, they are perceived as unequally skilful by their parents (Eccles, 1983). As a matter of fact, parents tend to expect their sons rather than their daughters to pursue careers in STEM fields, even when their daughters have a similar performance (OECD, 2015).The different exposition to role models and the unequal expectations and perceptions of parents as regards their sons and daughters, may affect the self-perception that girls have in mathematics, which in turns constrains their ability to excel in stereotypically masculine domains.

Recent research has also shown that in more gender-egalitarian societies girls' performance in mathematics and reading is boosted (González de San Román & De La Rica, 2012). Consequently, while the mathematics achievement gap between boys and girls shrinks, the reading gap between the genders widens. Moreover, having mothers who participate in the labor market appears to benefit the educational performance of girls, especially in countries with low female labor participation (González de San Román & De La Rica, 2012). These results suggest that there is an intergenerational transmission of gender roles from mothers to daughters, and that this effect is more positive for girls who have low performance in mathematics (González de San Román & De La Rica, 2012). Still, as the female labor participation increases, the advantage of having a working mother diminishes (González de San Román & De La Rica, 2012). This may be because females who participate in the labor market when this practice is not extensive are self-selected and, at the same time, are providing their daughters with a "groundbreaking" female role. Hence, their daughters would be raised in the belief that they can do as much as a man, increasing parental expectations and daughters' aspirations (González de San Román & De La Rica, 2012). In other words, their self-perception would be boosted by their mother's role model.

In contrast with financial resources and human capital, *cultural capital* does not have inherent value, and its utility surfaces when it is translated into socially appreciated skills. Although upper-class children are especially proficient in gathering non-cognitive skills that make their privileged position seem natural - such as language skills and self-assertiveness - gender conditions the ways in which privilege is constructed and instilled in children (S. R. Khan, 2010b). Gender entitles privilege, which was certainly not initially meant for women. Although females have overcome a number of obstacles regarding their education and nowadays outperform boys in school, gender conventions still limit the opportunities of girls. In this regard, upper-class non-cognitive attributes such as being self-assertive, leadership, and self-confidence are not categorized as female traits. As a consequence, the daughters of the upper class have a harder time finding the way in which to embody and translate their upper-class cultural capital into effective advantage (S. R. Khan, 2010b). The sons of the upper class, however, may find in the upper-class social norms and non-cognitive abilities a way to overcome the hindering effects of masculinity. Instead of being bold they are self-confident; instead of hostile they are self-assertive. In this manner, the upper-class understanding of masculinity may entitle more benefits than the upper class understanding of femininity (S. R. Khan, 2010b).

5.3.4 Gendered fields, gendered performance?

The advantage of boys in mathematics is even wider among high-achieving pupils than among "average" students (OECD, 2012a, 2015). While in PISA 2012, boys on average boys outperformed girls by 11 score points, this gap is as broad as 20 score points among the top 10% of students in mathematics performance (OECD, 2015). These differences could be due to the difficulties that girls have to "think like scientists" (OECD, 2015). Besides, girls tend to have a lower self-confidence and higher levels of anxiousness regarding mathematics than the boys who perform at the same level. These feelings may have their origin in the widespread belief that girls are not up to par with boys in mathematics. As a consequence, despite their cognitive abilities, girls appear to be fearful and face assessment in mathematics with more constraints than boys, which affects their performance. In other words, predominant gender stereotypes regarding academic subjects could hinder the capacity of girls to perform in mathematics, not as a result of to their innate abilities, but due to social and psychological constraints (Ambady et al., 2001; Shih et al., 2002, 1999, 2006).

Gender, and more precisely, gender stereotypes affect the educational career of children from early ages. In this regard, a number of studies have pointed out that the performance in a subject is hampered when an individual perceives that a sociocultural group of which (s)he is part is negatively stereotyped (Ambady et al., 2001; Shih et al., 2002, 1999, 2006; Spencer et al., 1999; Steele & Aronson, 1995). In this vein, indirect activation of a sociocultural chiché can affect the performance of stereotyped individuals. In their seminal work, Steele and Aronson (1995) established that African-American students - who tend to be stereotyped as bad students - underperformed relative to their white counterparts when they were notified that a test was determinant of their abilities. However, individual's identities are multidimensional and while some of those dimensions are negatively stereotyped, others convey positive connotations. Because diverse social identities are linked to diverse chichés, individuals may be open to different, and sometimes clashing, stereotypes. Indeed, Shih, Pittinky, and Ambady (1999) found evidence of how the subliminal activation of social identities can hamper as well as boost the mathematics performance of individuals. More accurately, they found that Asian-American women did better in a mathematics test when their ethnic identity was made salient - due to the cliché that Asians have higher mathematics skills than other ethnic groups - yet, they performed worse when their gender identity was switched on - due to the widespread stereotype that women are worse than men in mathematics skills - relative to a control group who had neither identity activated.

Performance in specific subjects, hence, appears to be vulnerable to the individual's perception of whether (s)he is part of a sociocultural group which is positively or negatively stereotyped in a specific domain. For the matter of this chapter, boys would be perked up in mathematics and girls would be boosted in languages. Moreover, to the advantage of being from a privileged social class, some individuals would add the perks of being from the positively stereotyped gender. Consequently, I expect the sons of tertiary educated parents to be the group with the greatest chance of being high performers in mathematics; the daughters of highly educated parents should pair in the likelihood with the sons of vocationally-educated parents, since both of them have one positive - as well as negative - source of (dis)advantage (social origins for the former, and gender for the latter). Finally, the daughters of vocationally educated parents will undergo the double burden of being from an underprivileged social class and a "stigmatized" gender. If instead of mathematics

we focus on the academic subject of German, the group with the highest probabilities of being high performers should be the daughters of highly-educated parents. The sons of highly-educated parents will pair with the daughters of vocationally-educated parents since, again, they both have one source of advantage. Finally, the sons of vocationally-educated parents will be the ones with the lowest chance of having a high performance in German.

This piece of research, hence, builds upon the literature and findings on stereotype susceptibility and the domain-specific effects of chichés on performance (Ambady et al., 2001; Shih et al., 2002, 1999, 2006; Spencer et al., 1999; Steele & Aronson, 1995). It follows the theory of "melting and snowballing" privilege presented in the third chapter of the dissertation. However, in this case, it centers the attention of the analysis on gendered "privilege" - instead of ethnicity - as a complementary source of (dis)advantage to social origins. In short, the analysis tackles the performance of boys and girls of diverse social origins in two "gendered" academic subjects: mathematics and German.

5.4 Framing gender: The German case

The most fundamental characteristic of the German education system is its multi-tiered secondary education stage. As early as age 10, pupils are sorted according to their school performance into three different schools and tracks: hauptschule, realschule and gymnasium, hauptschule being the least prestigious and gymnasium the most.[2] The authorities in charge of education are the German federal states or cities, although there are no major differences between them. Recent education reforms have moved towards a more integrated system and, consequently, the proportion of schools that incorporate more than one track has increased. Despite this evolution towards integration, a great deal of the variation in educational performance is found between schools (OECD, 2012a). Once children are tracked, however, they have the chance to transfer from one track to another upon the completion of some minimum requirements. Still, these transfers are not very common.

Early tracking may favor upper-class children due to their head start in life. More precisely, during their early childhood upper-class children enjoy the benefits of better nutrition, childcare and higher cognitive stimuli than the children of the lower class. Hence, when they start school they are better prepared than their lower-class counterparts. Furthermore, compulsory education starts at age 6, which means that the children of disadvantaged families have just 4 years to make up for disparities in school readiness before being sorted into different tracks. At the same time, previous studies have found that upper social class parents are better able to make up for a false step in education (Bernardi, 2012; Bernardi & Boado, 2013). Therefore, even if the upper-class children "fail" and are sorted into one of the two lower-tier tracks, they are better able to recover and transfer to a more prestigious track.

Concomitantly, the early tracking in different educational paths may bolster gendered educational careers. At age 10 children are especially sensitive to gender roles and stereotypes and, therefore, they may not be ready to challenge mainstream behaviors and break with gender stereotyped careers. Consequently, the German education system is especially challenging for the individuals that want to pursue a non-mainstream gendered career.

[2]For more detailed information about the German educational system please go to chapter 2 of the dissertation.

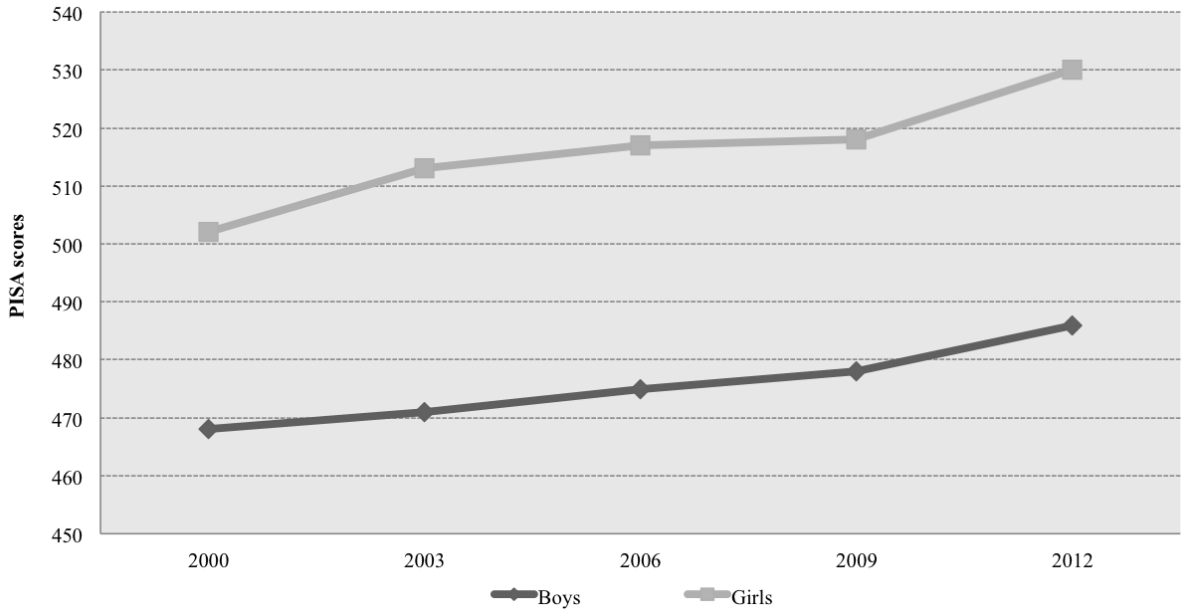

Figure 5.1: PISA scores in reading by gender in Germany (2000-2012). Source: OECD data indicators.

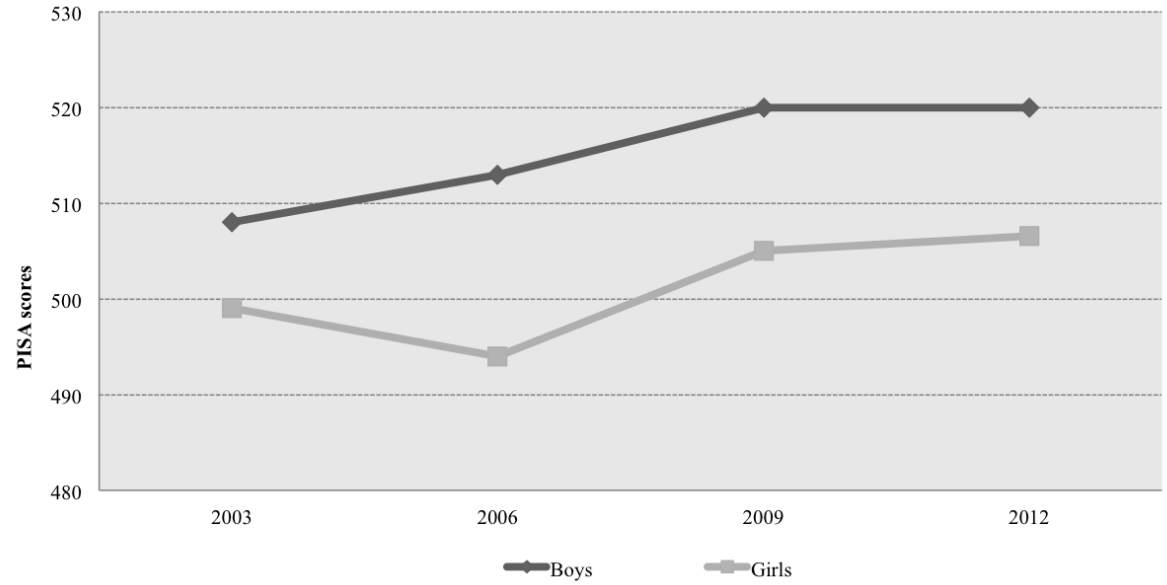

Figure 5.2: PISA scores in mathematics by gender in Germany (2000-2012). Source: OECD data indicators.

In the last decade, Germany has improved the overall scores of boys and girls in reading (figure 5.1) and mathematics (figure 5.2). Still, the trend has not converged and girls still outperform boys in reading while the opposite is the case in mathematics. As can be seen in figure 5.1, the reading performance of both genders experienced a substantial boost from 2009 to 2012, and this improvement has been greater for girls than for boys. The performance in mathematics has also increased in the last decade, but gender disparities in overall performance still persist. Nonetheless, the performance of girls experienced a substantial increase from 2006 to 2012, in

which they managed to improve over 10 score points.

	Top Performers		Low performers	
	Boys	Girls	Boys	Girls
Reading	4	5	20	9
Mathematics	20	15	17	19
Science	13	11	13	12

Table 5.1: Proportion of pupils performing at the top and bottom level in PISA 2012 by gender in Germany. Source: OECD data indicators.

Table 5.1 displays the proportion of top and low performers in different domains by gender. According to this data, Germany follows the general trend of Western countries in which there is a higher proportion of boys performing at the top level of mathematics, while girls perform better in reading. However, while the gender gap in reading and science is almost nonexistent, the gender gap in mathematics is slightly wider. If we now take a look at the share of low performers by gender, we can see that the proportion of boys performing at the bottom is much higher in reading than the proportion of girls (20% for the former and 9% for the latter). In mathematics, however, the share of girls performing at the bottom level is not substantially higher than the share of boys (just 2% more). Finally, there are no substantial differences between the genders in science.

In short, the overall achievement of German pupils improved over the last decade but the gender gap in different subjects still exist. Nonetheless, the gender gap is wider in reading and rather small in mathematics. These gaps may be the result of a self-fulfilling prophecy in which boys and girls perform as they are expected due to gender stereotypes, or perhaps due to secondary effects of gender since they are likely to chose different fields. This is to say, since boys and girls will pursue different career paths, and they tend to put more effort and interest in the careers path they have chosen, girls will lead the achievement in humanity related fields - such as reading - and boys in STEM fields such as mathematics. Yet, what happens when social origins (measured by Parental Human Capital (PHC)) intersect with gender? Do the gender achievement patterns hold or do the perks of being upper class compensate for membership of a negatively-stereotyped gender? Finally, do children from disadvantaged social backgrounds and negatively-stereotyped genders experience a "double burden" effect?

5.5 Methodology

5.5.1 The National Educational Longitudinal Panel Study of Germany

This paper uses data from the National Educational Panel Study (NEPS): Starting Cohort Grade 5 (doi:10.5157/NEPS:SC3:3.1.0). From 2008 to 2013, NEPS data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network[3].

[3]This paragraph has been copied following the reference instructions of the NEPS user agreement.

The starting cohort of grade 5 is composed of a representative sample of lower secondary level students. These students have been tracked through the different educational paths offered by the German system, mainly, between hauptschule, realschule, and gymnasium. However, students can still move upwards or downwards between school tracks depending on their performance and compliance with some academic requirements. Once they finish the lower secondary education, these students will be able to enroll in different types of upper secondary education or enter the job market. The first survey was carried out in 2010/11, the second wave in 2011/12 and the third wave focused on the period 2012/13. Two more waves are expected to be released with information on the transition from lower secondary to upper secondary education.

The data provides information about students but also on their parents, teachers, and schools. In addition, NEPS provides information concerning children's performance in a number of subjects such as science, biology, mathematics, languages, etc. However, the analysis focuses on mathematics and languages since these are the most gender-stereotyped subjects among the ones provided.

5.5.2 Dependent variables

The analysis has been conducted in a separate manner for each dependent variable. To analyze the likelihood of being in one track or another, three different dummies have been used as dependent variables. One per track - hauptschule, realschule, and gymnasium - and the predicted probabilities have been conducted for different types of students.

Those students who responded as having "very good" grades in mathematics have been conceived as high performers in that specific subject. The dependent variable "being a high performer in mathematics" takes the value 1 when the student has answered that their grades in mathematics were very good and 0 when the child has answered otherwise. The same type of variable has been used to analyze a high performance in German.

Children from different social origins start school with different levels of "readiness" due to different cognitive stimulation and living conditions early in life. Furthermore, boys tend to have more disruptive behavior, especially in the early stages when self-control is not yet a very developed skill. These differences can lead to the perception that the lower classes - boys rather than girls - have innate disabilities. To disentangle whether this is the case, "having special educational needs" has been used as a dependent variable. In this vein, children have been considered as having "special educational needs" when their parents answered positively to the question *"Were special educational needs for <target child> determined prior to or during school attendance?"*

The next section, "measures of educational performance" presents more detailed information about the dependent variables.

5.5.2.1 Measures of educational performance

Academic track. As early as age 10, children in Germany are recommended and sorted into different secondary school tracks. NEPS provides information about the recommended track that children would follow. The most common tracks are: Hauptschule, Realschule and Gymnasium (table 5.2). The analysis, therefore, has focused on these three tracks.

Performance in German and Mathematics. Educational performance in German and mathematics has been measured according to the reported "grade" obtained in the last report. More

Categories	Frequency	Percentage
Hauptschule	319	10.88
Realschule	801	27.33
Gymnasium	1753	59.81
Others	58	1.98

Table 5.2: Lower secondary track

precisely, children have been considered as high performers when they answered "very good" to the question *"What grade did you have on your last annual report card in "German/mathematics?"*.

Grade	Overall	Between	Within percent
Very good	1361 (14.83%)	979 (25.54 %)	57.97 %
Not very good	7819 (85.17%)	3581 (93.43%)	91.19%

Table 5.3: High performers in mathematics

Grade	Overall	Between	Within percent
Very good	978 (10.10%)	644 (16.45%)	60.30%
Not very good	8704 (89.90%)	3728 (95.20%)	94.63%

Table 5.4: High performers in German

Special needs.Children have been considered as having "special needs" when their parents answered positively to the question *"Were special educational needs for <name of target child> determined prior to or during school attendance?"*.

Special needs	Overall	Between	Within percent
No	6233 (88.56%)	3551 (89.81%)	96%
Yes	805 (11.44%)	687 (17.37%)	79.33%

Table 5.5: Identified with special educational needs

5.5.3 Independent variables

As for the independent variables, a number of factors have been taken into account in order to measure social origins. First of all, Parental Human Capital (PHC) has been included in the analysis as a measure of the social status of the family. Secondly, the level of education of each parent has been used as an indicator in a separate way. Finally, the occupational sector of either the mother or the father has been used to disentangle how proximate role models may affect subject-specific abilities. In other words, mothers and fathers working in sectors that defy the mainstream gender stereotypes may influence the self-conception that children have of their abilities in different subjects and, therefore, their ability to perform in such subjects.

In order to avoid bias due to immigration processes or family proficiency in German, the analysis has been restricted to children without an immigrant background (N=2960).

The next subsections include more detailed information about how the independent variables have been constructed, and their descriptive statistics.

5.5.3.1 Measures of social origins

Family structure. In order to build the variables regarding parental education, I have first constructed a variable to pinpoint the relationship of the respondent and his/her partner with the child and, later, the family configuration. Hence, one variable has been constructed for the main respondent (3309 mothers and 613 fathers) and another for the partner (482 mothers and 2256 fathers). Taking the relationship with the child and living setting into account, a variable including information about the family structure in which the child lives has been constructed. There are 2642 biparental, 325 monoparental, and 380 reconstructed families. The main reason to include biparental families (79% of the families in the sample) - and leave out of the analysis single-parent families and re-constructed families - is the following. Both separation and divorce are known to affect children's educational achievement, especially among disadvantaged children (REF). In addition, both events occur after a period of conflict between parents. This conflict can affect the performance of children. By selecting biparental households, therefore, I am including the "most advantaged" families in the sample. Hence, we can infer that the additive effects of gender and social origins would be greater among single-parents and re-constructed families. Consequently, if I find evidence of gender and social origins additive effects on achievement in biparental families, I can infer that those effects would be greater among more disadvantaged families, such as single-parent families or re-constructed families.

The variables including information about parental education have been constructed using the information about the "respondent" and "partner" CASMIN educational level, and the "respondent" and "partner" variable establishing the link with the child. Finally, the "parental human capital" variable has been constructed only for biparental families for which information was available.

Parental Human Capital. The most common measures of social origin in research on social stratification and social mobility are the parental level of education and type of occupation. In this research, the main variables to account for social origin effects are Parental Human Capital (PHC), Mother Human Capital (MHC), and Father Human Capital (FHC). In this regard, PHC refers to the highest level of education completed by either of the parents. The variables have been recoded from the CASMIN educational scale provided by NEPS. While MHC and PHC included information about all mothers and fathers, PHC only includes information about those families in which the educational level of both parents was available. In other words, since PHC is the highest level of education, only if it was possible to determine it with certainty was the information included.

The analysis has mainly focused on the children of medium (CASMIN 2a/2b/2c) and upper-tertiary educated parents (CASMIN 3b). The reasons for pursuing this manner of analysis are the following. First, these are the most common educational levels among the parents in the sample. Although low-educated parents are still a fair share of the sample, they are not that numerous among biparental families (N=268) and, once other variables such as occupational sector of the parents are included in the analysis, the sample no longer appears to be representative. Yet, they have been included once, when the model does not imply a huge loss in the sample. Parents with lower tertiary degrees are even less common than parents with low levels of education, therefore, they have been mainly left out of the analysis. Finally, by focusing on these educational groups we follow - again - the logic of the "most advantaged" case scenario and if, even in this cases, gender

	Categories	Frequency	Percentage
Parental Human Capital			
	Low (CASMIN 1a/1b/1c)	268	10.90
	Medium (CASMIN 2a, 2b, 2cgen, 2cvoc)	1305	53.09
	Lower tertiary degree(CASMIN 3a)	104	4.23
	Upper tertiary degree (CASMIN 3b)	781	31.77
Mother Human Capital			
	Low (CASMIN 1a/1b/1c)	736	7.84
	Medium (CASMIN 2a, 2b, 2cgen, 2cvoc)	2.358	62.32
	Lower tertiary degree(CASMIN 3a)	189	4.99
	Upper tertiary degree (CASMIN 3b)	501	13.24
Father Human Capital			
	Low (CASMIN 1a/1b/1c)	761	26.52
	Medium (CASMIN 2a, 2b, 2cgen, 2cvoc)	1.271	44.29
	Lower tertiary degree(CASMIN 3a)	287	10.00
	Upper tertiary degree (CASMIN 3b)	551	19.20

Table 5.6: Human capital

and social origins have the hypothesized effects we could infer that these effects would be even greater among less advantaged social groups.

Occupational sector. Parents who work in occupational sectors that are non-mainstream for their gender may act as a positive role model for their same-sex children and, therefore, boost their performance in different domains. For example, the daughters of mothers working in STEM jobs may pursue careers in STEM fields because they have a proximate female role model that breaks with gender stereotypes. Hence, Mother Occupational Sector (MOS) and Father Occupational Sector (FOS) have been selected to disentangle how stereotypes in different domains are affected by non-mainstream gender roles. This analysis has been complemented by including MHC and PHC in order to have a better understanding of the kind of job that parents may develop in different fields. For example, a tertiary-educated mother working in engineering will have a better job than a mother that just pursued lower levels of education but works in STEM fields.

The original variable "occupational subject (BLK)" provided by NEPS has been recoded to comprise the categories shown in table 5.7. Two categories have been left out of the analysis for different reasons. The "professionals and semiprofessionals" category has not been included due to insufficient information about the occupational sector in which the job is developed and, therefore, unsuitability to answer the research question posted. In addition, due to sample constraints, parents working in the "agricultural" sector have been omitted from the analysis.

5.5.4 Longitudinal probit models and predicted probabilities

A number of longitudinal probit models (LPM) have been estimated in order to disentangle the puzzle of this chapter.[4] The predicted probabilities for different types of students have been computed following the estimation of the LPM, and displayed as the chance (in %) of having a determinate result.

[4]The regression coefficients are available in the Appendix D.

	Categories	Frequency	Percentage
Father Occupational sector			
	Agricultural	59	2.29
	Manual	158	29.40
	Technical and engineer	372	14.45
	Services	338	13.11
	Professionals and semiprofessionals	359	13.93
	Commercial and administrative occupations	407	15.79
	Manager	285	11.06
Mother Occupational Sector			
	Agricultural	49	1.42
	Manual	204	6.94
	Technical and engineer	120	3.47
	Services	790	22.84
	Professionals and semiprofessionals	917	26.51
	Commercial and administrative occupations	1181	34.14
	Manager	162	4.64

Table 5.7: Occupational subject

The main advantage of predicted probabilities over Odds Ratio (OR) is that the analysis is much more straightforward and provides more detailed information about the process under analysis. This is because OR represents the odds that a result will happen given a specific exposure, in comparison to the odds of a result taking place in the absence of exposure. Consequently, odds ratio is a measure of the magnitude of an effect, and it mainly describes the strength of association between two binary data points. Because the aim of this chapter is not to disentangle the strength of association between binary variables, but rather how different individuals with specific characteristics have different opportunities in education, the predicted probabilities of "success", instead of OR, have been computed for different types of individuals, after the estimation of the LPM models.

5.6 Results

5.6.1 Tracking social class

Around age 10 - depending on the Federal State - children in Germany are sorted into different educational tracks. There are three main lower secondary tracks: the *hauptschule*, which provides its students with a basic general education and spans from 5th to 9th grade; the *realschule*, which offers more extensive education than the hauptschule and lasts from 5th to 10th grade; and the *gymnasium* which is the most academically-oriented educational track and spans from 5th to 12/13th grade. Briefly, hauptschule is the least prestigious and academically demanding path, whereas gymnasium is the most. Hence, to reach the goal of class maintenance the upper social class must enroll in a gymnasium, in contrast, the lower social classes would have "enough" by attending hauptschule or realschule.

Figure 5.3 shows the predicted probabilities of being recommended to either hauptschule, realschule or gymnasium for native German children, living in biparental families, with medium

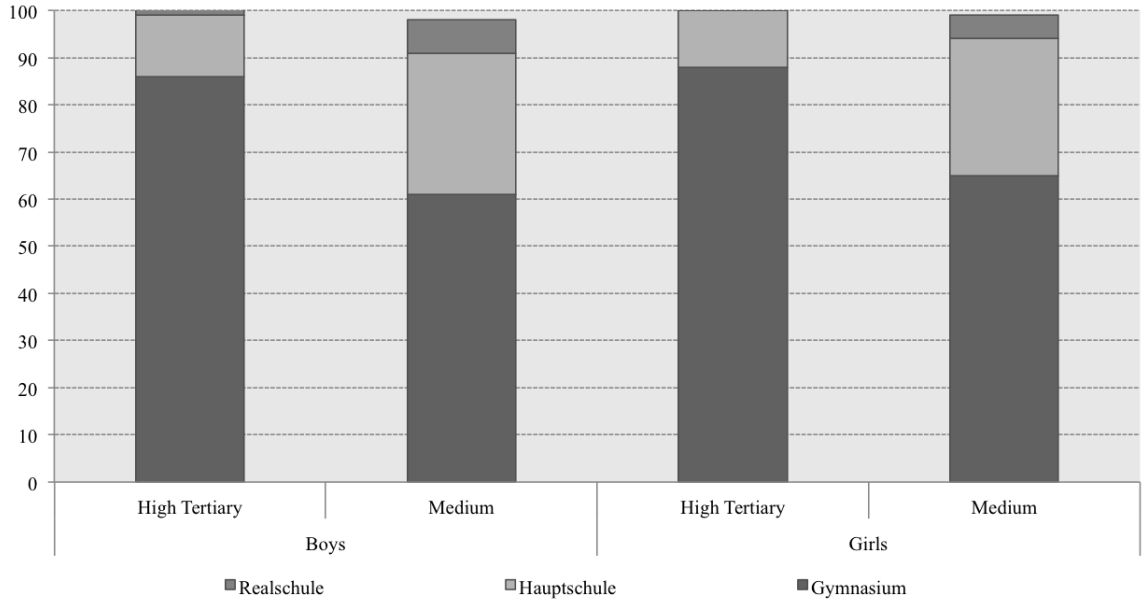

Figure 5.3: Probability of being recommended to different high school track by Parental Human Capital and gender of the child.

or high educated parents by the gender of the child [5] . We can draw two main conclusions from the data shown in figure 5.3. First, there are no striking differences by gender within PHC levels, although a girl is slightly more likely to be recommended to a gymnasium than a boy. Second, the child of highly-educated parents is much more likely (an 86% chance if a boy and an 88% chance if a girl) to be recommended for gymnasium than a child with medium PHC (a 60% chance for a boy and a 65% chance for a girl). In fact, the latter has a higher chance of being recommended for hauptschule (around a 30% chance for both genders) than the child with highly-educated parents (around a 10% probability). These results suggest that gender does not play a crucial role in the route that children take at this stage of education, at least regarding the likelihood of being recommended to a gymnasium, realschule or hauptschule. In contrast, PHC has a strong impact on the educational chances of German pupils. Consequently, we can infer that PHC rather than gender is shaping the educational paths of children in Germany. So far, these results do not contain any surprises. The offspring of highly-educated parents need to pursue higher levels of education to successfully reproduce their privileged social position, and therefore the fact that they are more likely to pursue gymnasium is not surprising. Simultaneously, the children of medium-educated parents may opt to follow their parents' path and enroll in lower-tier secondary schools because they do not need higher credentials to avoid social demotion.

Yet, once children are sorted into different educational tracks, gender disparities may emerge. The following sections take a deeper look at academic achievement by gender and PHC of German children who attend the most prestigious track (gymnasium). There are some reasons to choose the students of this track and not others. First, it is the track on which most students are enrolled and, therefore, the sample is much bigger than for the other tracks. Second, the fact that the

[5]The dependent variable takes value 0 if children have been recommended to another track. For example, when analyzing the chances of being recommended to Haupteschule, the outcome variable takes value 1 if children have, indeed, being recommended to Haupteschile, and value 0 if children were recommended to any other track.

children have successfully enrolled on this track points to a certain level of academic skills that should prevent, to a certain extent, bias in my results due to individual effects and unobserved heterogeneity. However, it is true that the children with medium PHC who enroll in gymnasium are positively selected. In other words, by succeeding against the odds they have already shown some characteristics that make them different from the "average" child of "medium" educated parents. However, if the hypothesis and theory so far presented turns out to be confirmed among the "most brilliant" children of medium educated parents, we can assume that the theory and results are robust and hold for the broader population. Finally, gymnasium appears to be less subject to gender stereotypes. Indeed, previous research tends to point to vocational studies as more masculine oriented (OECD, 2015). Therefore, the task of disentangling how subject-specific stereotypes play a role and affect the capacity of boys and girls to perform in education becomes even more arduous. This is because it is not possible to unravel which extent disparities are due to the gendered track or subject-specific gender stereotypes.

5.6.2 The sons and daughters of social class

Gender is a social construct that entitles privileges. Boys and girls acquire it via the repetition of performances (Butler, 1988). These performances work to generate a tacit internalization of social categories of differentiation that - once well displayed - make the socially-constructed category of gender seem natural (Butler, 1988). The display of gendered conducts together with the internalization of gender stereotypes constrains the educational opportunities of children in different ways. In this vein, the widespread beliefs about innate differences in the capacities of boys and girls in specific-domains can either perk up or harm the capacity of children to perform in different areas. On the one hand, boys are believed to be better at mathematics and in STEM areas of work. On the other hand, girls are assumed to be better at languages and in "caring" careers such as nursing. In this manner, gender stereotypes regarding the different subjects affect the self-conception of boys and girls, which in turn affects their predisposition to learn and perform in the aforementioned domains.

All in all, we can understand the educational performance of children as a product of different factors such as gender and social origins that either boost or hinder their educational process. In this manner, the children of the upper class will perform better in the subjects in which their gender is positively stereotyped. For example, upper-class daughters will have a high chance of being top achievers in German because they are upper class, but also because girls are believed to be better in this specific subject. If, instead, the child of the upper class is from the negatively stereotyped gender, the initial advantage of being upper class should diminish due to the negative effect of gender on their self-conception. Consequently, the chance of being a high achiever in German will be lower for the son of the upper class than for the daughter of the upper class. In fact, if the theory presented so far is true, an upper-class child with a negatively stereotyped gender should mimic the likelihood of being a high achiever of the offspring of lower educated parents but a positively stereotyped gender. This is because both individuals will have their performance perked up by just one source of "advantage". Finally, some children will undergo the double burden of a disadvantaged background and a negatively stereotyped gender. In short, gender and social origins will intersect thus creating different chances to excel in different domains for boys and

girls.

Nonetheless, having a mother or a father in a non-mainstream field may alter the self-conception of children in the subject in which they are not positively stereotyped. For example, a girl with a mother working in STEM fields may have a better self-conception of her abilities in mathematics, because she has a proximate gender role that demonstrates that women can be good in this domain. Besides, a mother working in STEM fields may engage their daughters in activities that would perk up their abilities in such fields. For this reason, the mother's and father's occupational sector, as well as MHC and FHC, have been included in the analysis of how the benefits of being upper class are shaped by the effects of subject-specific gender stereotypes.

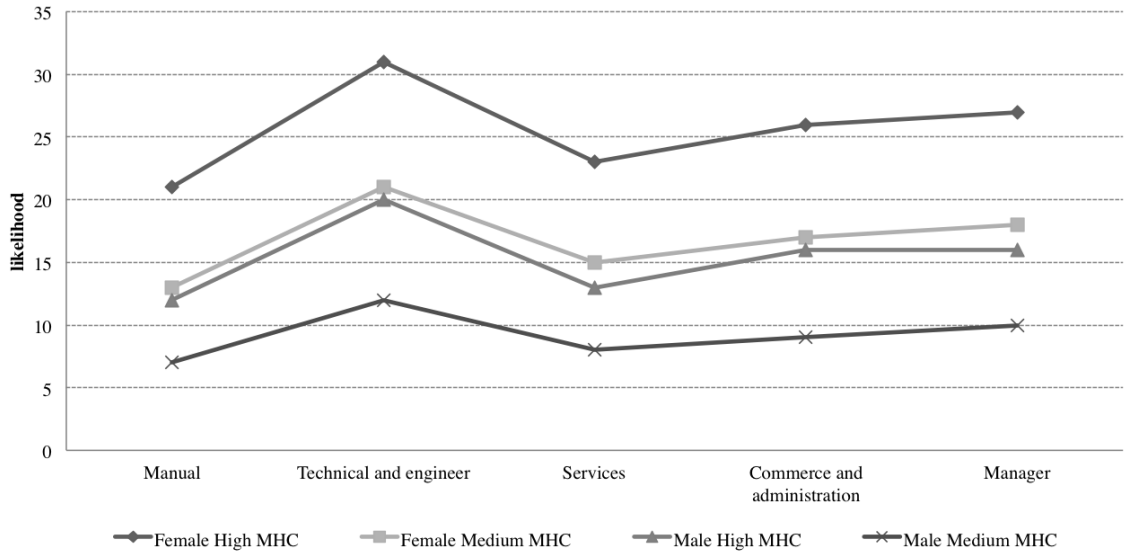

Figure 5.4: Probability of being a high performer in German by mother human capital, mother occupation and gender of the child.

The results displayed in figure 5.4 show the predicted probabilities of being a high performer in German for boys and girls who live in biparental families, attend gymnasium, are native Germans and whose mothers have either medium or high levels of human capital by the occupational sector in which the mother works. The figure is revealing in several ways. First, there is a clear and parallel pattern by mother's occupational sector, with the offspring of mothers with technical and engineer occupations as the most likely to be high performers in German. In contrast, the offspring of mothers working in manual sectors are the ones with the lowest chance of being high performers in German. Nonetheless, differences by mother's occupational sector are not salient and the variation in the chance of being a high achiever in this core subject appears to be the consequence of gender factors and Mother Human Capital (MHC) effects. In this regard, the daughter of a highly educated mother has the highest probability of being a high achiever in German - as anticipated by the theory presented before - especially if the mother works in the technical and engineering sectors (between a 21% and a 31% probability). This is perhaps due to the positive role that their mothers post. The daughter of a medium educated mother (between a 13% and a 21% chance) and the son of a highly-educated mother (between a 12% and a 20% chance) almost pair in the chance of being a high achiever in German. Since both individuals have

one source of advantage - gender in the former case, and MHC in the latter - it is reasonable that both groups pair in their chances. Finally, the son of a medium-educated mother has the lowest chance of being a high performer in German (between a 7% and a 12% probability).

If instead of mother's occupation and education we analyze the effects of Father Human Capital (FHC) and occupational sector (figure 5.5) we can see that the results do not differ much with respect to those displayed in figure 5.4. The only difference to be highlighted is that the daughter of a highly educated father working in the technical or engineering sector is slightly less likely to be a high achiever in German than when the mother occupation's and education are taken as an explanatory factor. In addition, children with just once source of advantage - either FHC or gender - now perfectly mimic each others' results.[6] Again, the son of a medium-educated father is the individual with the lowest chance of being a high performer in German.

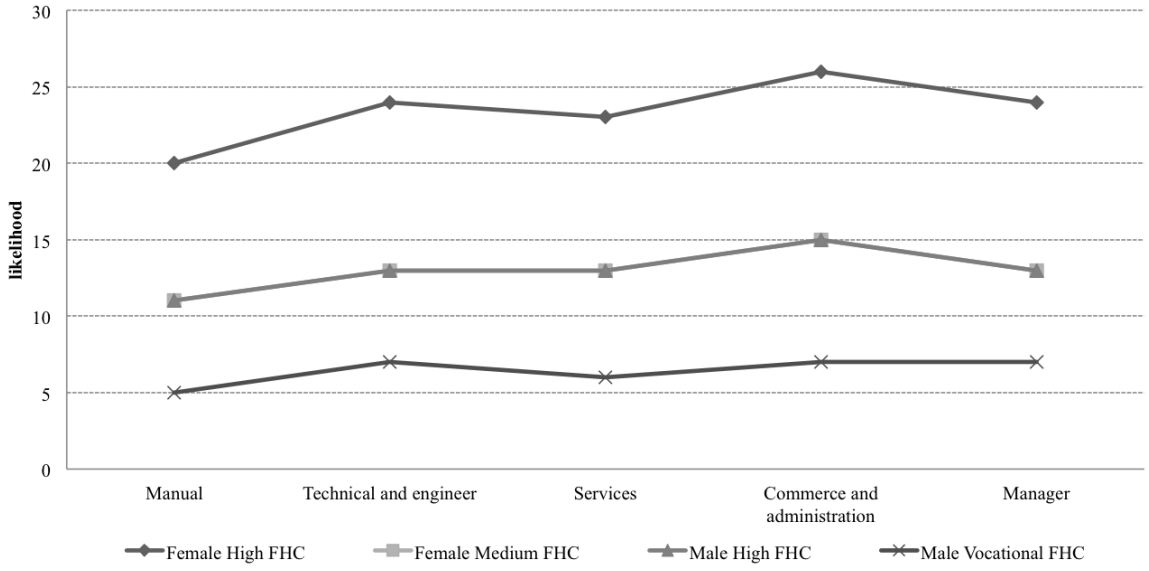

Figure 5.5: Probability of being a high performer in German subject by father human capital, father occupation and gender of the child. Children age 10-14.

German is believed to be a feminine domain, but, what about mathematics? Do similar patterns emerge in a stereotypically masculine field? Figure 5.6 shows the predicted probabilities of being a high achiever in mathematics for German boys and girls, who live in biparental families, attend gymnasium and whose mother has either medium or high levels of human capital, by the occupational sector in which the mother works [7]. In this case, boys instead of girls are the positively stereotyped gender, since there is the widespread belief that boys are better than girls in this core subject. Consistent with this fact, we can see that the son of a highly-educated mother

[6]The predicted probabilities of both individuals slightly differ by decimals, yet, the differences cannot be appreciated in the graph.

[7]At this point is important to highlight that social origins coefficients do not appear to be statistically significant in the probit model, yet, the computed probabilities show substantial differences by social origins. This could be due to the following reason. The coefficient in a probit model tells us the effect of a social origins on the latent propensity of boys and girls to excel in mathematics. While the probabilities give me an effect of the chances of a positive outcome. The size of the effect (and its significance) depends on the values at which I state the explanatory variables. Hence, even when the effects of social origins do not appear to be statistically significant, the predicted probabilities can still show substantial differences. Nonetheless, these differences must be taken with a lot of caution due to the statistically significance of the aforementioned coefficients.

is the individual with the highest chance of being a high performer in mathematics (between a 20% and a 26% chance, depending on the mother's occupational sector). Again, the offspring of mothers working in engineering and technical occupations have the highest probability of being high performers in this core subject (a 26% chance). The son of a medium-educated mother and the daughter of a highly-educated mother almost pair in their probability of being high performers in mathematics - the former being slightly more likely than the latter. As expected, the daughter of a mother with medium levels of human capital is the pupil with the lowest chance of being a high performer in mathematics (between a 5% and a 7% chance), since she suffers the double burden of a negatively stereotyped gender and a lower educated mother.

If instead of the mother's field of occupation and educational level we take the father's (figure 5.7) we can see that, again, the results do not differ much from the ones displayed in figure 5.6. However, the likelihood of being a high achiever appears to increase for both genders and especially for boys. Here, the son of a highly educated father has the highest chance of being a high performer in mathematics (between a 48% and a 53% chance), followed by the son of a medium-educated father (between a 32% and a 36% chance). The improvement in the likelihood is especially clear for the offspring of fathers working as managers or in commerce and administration occupations. The daughter of a highly-educated father also has a higher chance now than when mother's occupation and education is taken as an explanatory factor. However, she is slightly less likely than the son of a medium-educated father of reaching a high level of proficiency in mathematics. Still, these differences are not substantial and the "pattern" is almost mimicked by both individuals. Finally, the daughter of a medium-educated mother is subject to a double jeopardy, and has the lowest probability among all of being a high achiever in mathematics (between a 17% and a 20% probability).

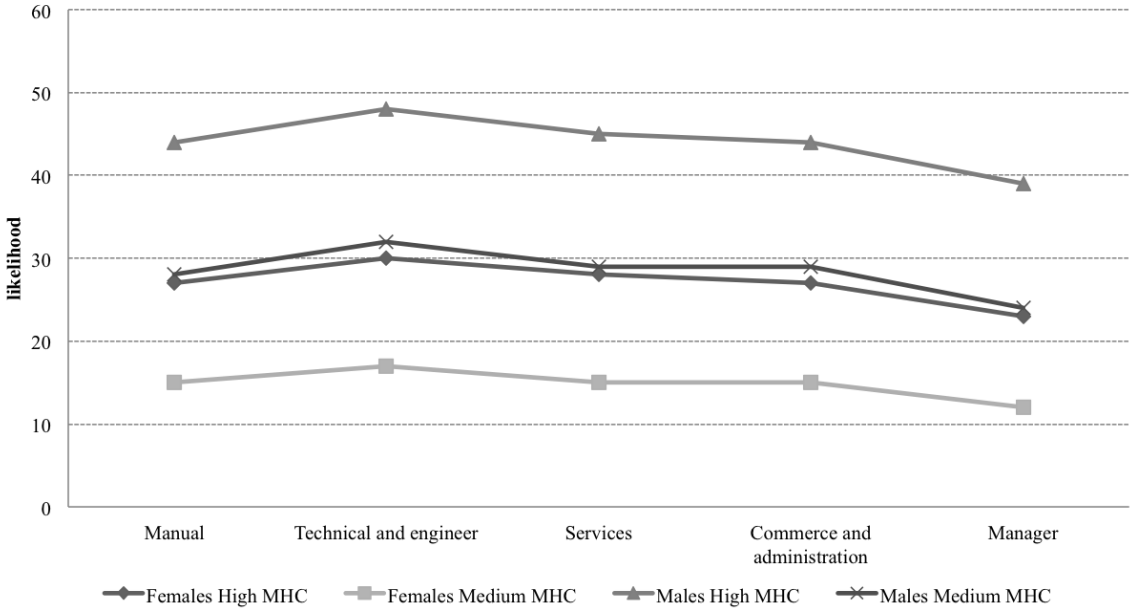

Figure 5.6: Probability of being very good in mathematics subject by mother's human capital, mother occupation and gender of the child. Children age 10-14.

Altogether, these results suggest that the sons and daughters of social class have unequal

chances of being high performers in the two core domains under analysis. German is believed to be a female domain, while mathematics is believed to be a masculine area. Since these beliefs are widespread it is fair to assume that children are familiar with them and face mathematics and German academic subjects with different attitudes. Girls, therefore, are advantaged in German while boys are in mathematics. Because of this, depending on the subject under analysis, we can see that some individuals add the benefits of a positive gender stereotype to the advantages of social origins. We can also see that some children undergo the double burden of a negative gender stereotype and a disadvantaged social class.

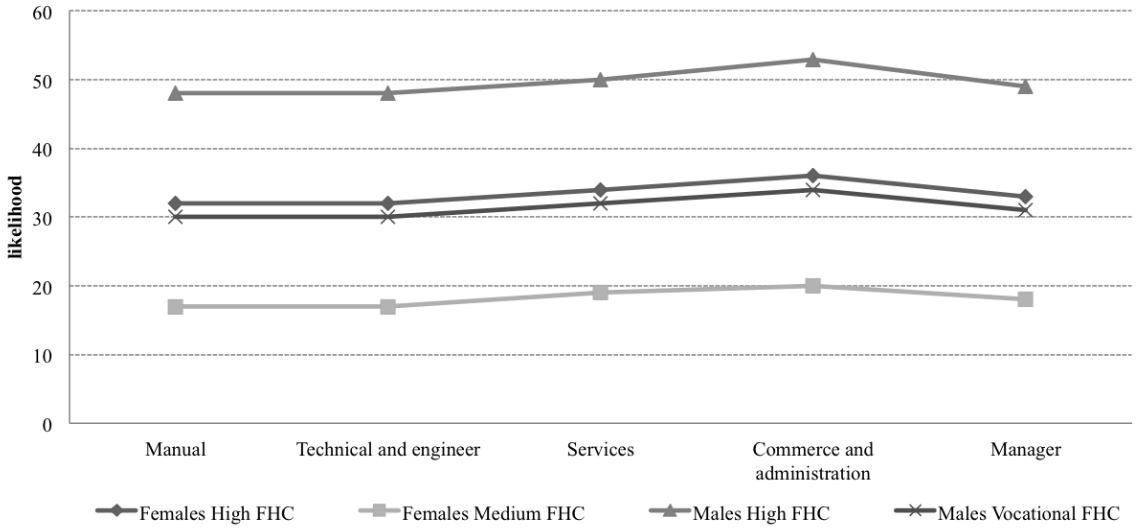

Figure 5.7: Probability of being very good in the subject of mathematics by father human capital, father occupation and gender of the child.

Finally, the occupational sectors in which parents work do not appear to have a substantial effect on the likelihood of being a high performer in either the subjects of mathematics or German. Nonetheless, the positive effect on children's performance could have its roots in labor participation rather than in sector of occupation. For example, mothers would be a positive role model for their daughters by being active in the labor force regardless of the occupational sector in which they work. By focusing exclusively on active mothers and fathers these effects could be concealing other benefits of parental occupation.

5.6.3 The primary effects of social origin and gender in education

Gender affects the capacity of children to perform in school through two main roads: behavior and self-conception. The former refers to the ways in which gender identity influences the conduct of children in school, and the influence that these conducts have in the learning process of children. The latter refers to the widespread beliefs about boys and girls in society, beliefs that have a crucial impact on the self-conception of children and their capacity to perform in different domains. The combination of the former and the latter effects are understood here as the *primary effects of gender* in education.

The aforementioned effects, however, are mediated by social origins. This is because masculine and feminine identities are subject to social class values. Masculine traits such as boldness and disruptive behavior are in conflict with the upper social class identity, but in consonance with characteristics valued in disadvantaged environments (S. R. Khan, 2010b). Hence, whereas social class socialization prevents upper-class sons from building a hindering masculine identity, it may multiply the hampering repercussions for the sons of disadvantaged families. As a matter of fact, previous research has shown that boys' performance is more vulnerable to disadvantaged environments than girls' performance (OECD, 2015). Indeed, there are more boys than girls among the bottom achievers in all three domains assessed by PISA. Boys, hence, appear to be more prone to failing at school than girls. Detachment from school is one of the most worrying consequences of educational failure. Consequently, boys may have a growing feeling of disaffection toward school and learning. Teachers and other educational professionals, may perceive this growing disaffection and school failure as an "innate disability" to perform in school.

Due to the joint effects of social origin and gender in their academic performance, socially disadvantaged boys will be especially vulnerable to labels such as having "special education needs". This higher vulnerability would be the product of three main processes. First, in societies with meritocracy beliefs teachers will tend to assume that the educational failure of children is due to a lack of abilities or effort, rather than to institutional and social processes. Hence, failing children will be held responsible for their performance. Second, low performance may result in detachment from school, which would start a vicious circle in which failing students misbehave and receive lower grades because of it, and vice versa. Finally, once children are labeled as having special needs, they may tend to display conducts that are in accordance to such label and stereotyping. In other words, children identified with special educational needs will tend to perform in a stereotype-consistent manner, which will reinforce the initial perception of these children as having special educational needs.

In sum, masculine and feminine identities together with social class norms affect the ability of children to perform in school. Teachers and school officials could be perceiving the consequences of hindering identities and life conditions - such as low cognitive development - as innate learning difficulties rather than the consequence of social processes. In this regard, the sons of low-educated parents will have a higher probability of being perceived as having special needs, both due to their hard start in life and their masculine identity. In contrast, the upper classes will enjoy the benefits of a head start in life and the perks of a more "school" friendly gender identity. Hence, do the conjoint effects of social origins and gender identities result in disparities in the likelihood of being perceived as having a learning difficulty?

Figure 5.8 displays the likelihood of being identified as having special educational needs by PHC and gender for German children living in biparental families. The graph shows several clear patterns. First, as PHC increases the likelihood of being identified as having special needs decreases substantially. Second, boys are more likely to be identified with special needs than girls. In fact, the graph shows a clear and parallel trend pointing to a diminishing likelihood for both genders by PHC, in which boys are always more likely to be labeled as having special needs than girls. Finally, the gap between PHC levels among boys (28%) is higher than the gap among girls (21%). There is no reason, however, to believe that boys are more predisposed than girls to have special educational needs. Perhaps differences in demeanor such as engaging in disruptive

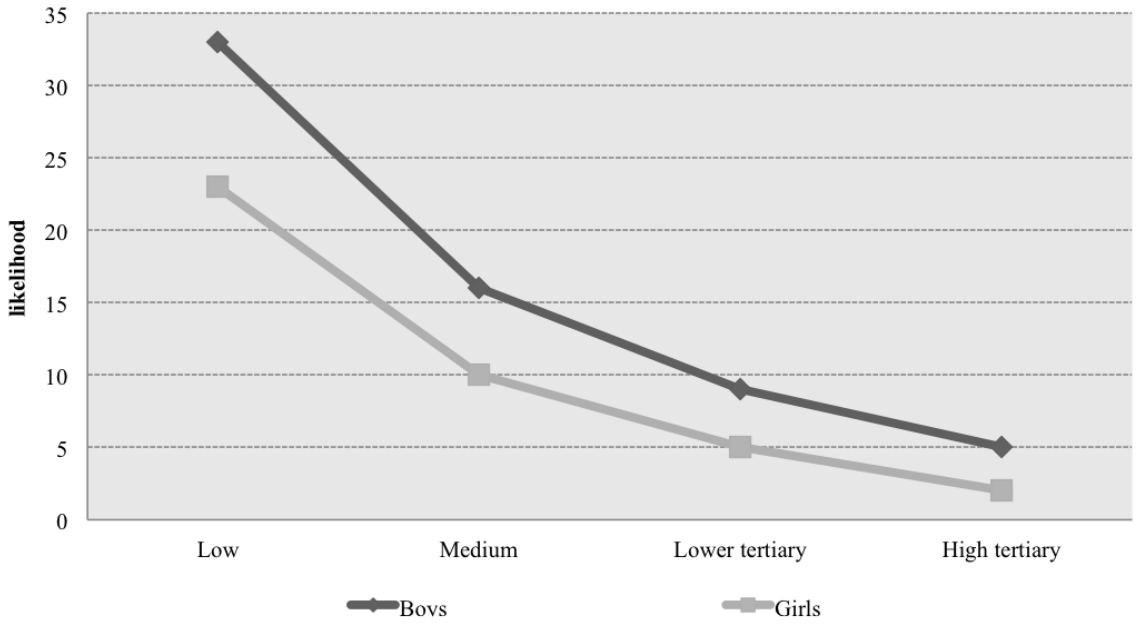

Figure 5.8: Probability of being identified as having special needs by the gender of the child and Parental Human Capital.

behaviors and disparities in school readiness are being identified as cognitive difficulties when they are, in fact, products of unequal behavioral patterns - between genders - and nurturing practices - between PHC levels.

If we now turn our attention to the differences among boys we can see that whereas the son of low-educated parents has a 35% chance of being identified as having special needs, the son of high tertiary educated parents has less than a 5% chance. This great gap cannot exclusively be explained by genetic disparities between social groups. In other words, even if the offspring of low educated parents were more predisposed to have special needs due to their hard start in life, it is difficult to believe that the disparities between social groups would be of this size uniquely due to genetics. We can hence infer that institutions are perceiving and identifying as special needs what is instead the result of social inequalities. In this manner, the son of lower-educated parents may be labeled and tagged with this denomination, which will likely affect his self-conception and educational opportunities (Ambady et al., 2001; Shih et al., 2002, 1999, 2006; Spencer et al., 1999; Steele & Aronson, 1995).

If, instead, we take a glance at the differences among girls we can see that the PHC hierarchy persists, although girls appear to be less likely to be identified as having special needs than boys. More precisely, the daughter of low-educated parents has a 23% chance of being labeled as having special needs, while the likelihood diminishes to 2% in the case of the daughter of high-tertiary educated parents. The daughter of medium-educated parents has a lower chance of being identified with special educational needs (10%) than the daughter of low-educated parents. Yet, she is still much more likely to be identified with special educational needs than the daughter of the highest educated parents. Hence, despite the protecting effect of gender, it seems that girls of the lower classes are still disadvantaged with respect to the daughters of highly-educated parents.

If we take a deeper look at the disparities between genders and PHC we can pinpoint substantial

differences. As said before, the daughter of a low educated German has a 23% chance of being identified with "special educational needs", which constitutes a 10% gap with respect the son of a low educated German. The likelihood of being labeled as having educational special needs is twice lower for the offspring of medium educated parents than for of low educated parents (for both genders). Finally, the daughter of a high tertiary educated German is the one with the lowest probability of being identified with special needs (a 2% chance).

In brief, these results suggests a worrying scenario. Educational professionals appear to engage in meritocracy explanations to justify the educational achievement gap between genders and social groups. The child of low educated parents - the son rather than the daughter - has a higher probability of being identified with special educational needs than the child of highly-educated parents. Certainly, previous research has shown the hindering effects of deprivation and poor living conditions on brain development in early stages of life (Nelson & Sheridan, 2011). However, the huge size of the gap and the level of development of the German welfare state make it difficult to justify such differences uniquely on account of biological processes. It could be, rather, that the difficulties in the early stages of life, such as lower language development, are identified as special educational needs in the case of disadvantaged social groups, while this would not be the case for the advantaged ones. The label will accompany the children of low educated parents during the following stages of life, and it may end as a "self-fulfilling prophecy" in which children behave and perform in accordance with the tag they have been assigned. Indeed, previous research has shown how negative stereotyping can hinder the performance of children in different domains (Ambady et al., 2001; Shih et al., 2002, 1999, 2006; Spencer et al., 1999; Steele & Aronson, 1995). Finally, the differences between PHC appear to be wider than those between genders, although girls appear to be more protected and less likely to be identified as having special educational needs, perhaps because they tend to have better behavior and language skills than boys.

5.7 Discussion

Although capacity may have no gender, gender has capacities. In other words, gender stereotypes influence the ability of children to perform in different domains. The widespread beliefs that societies hold regarding innate subject-specific abilities constrain, or perk up, the performance of boys and girls. Nonetheless, children are not born with innate capabilities in different domains, at least not because of their gender. Still, societies instill this belief in the young minds of boys and girls, and when a claim is constantly repeated, it ends up becoming true. Concomitantly, children of different social origins are not born with a biological predisposition to perform well or badly in school. Yet, disparities in living conditions condition the opportunities of children from different social classes. When the two sources of privilege - gender and class - meet, the educational opportunities of boys and girls are set.

The results presented in this chapter suggest that boys and girls from different classes have different chances to outperform in the subjects of mathematics and German. These different opportunities appear to be rooted in either class advantages or gender privilege. It is true, however, that the fact that an upper-class girl has the highest chance to outperform in language, and an upper-class boy in mathematics should come as no surprise. Nor is the fact that lower-class children from negatively stereotyped genders are the least likely to outperform in the aforementioned

subjects. The interesting result of this research is that children who enjoy one source of privilege - be that either class or gender - mimic each others' results. In other words, class and gender seem to report similar benefits and disadvantages for individuals. Briefly, while some children enjoy the benefits of a "double advantage", others suffer the "double trouble" of class and gender disadvantages. Nonetheless, there are individuals whose performance is perked up either by class or privilege but, at the same time, is hindered by membership of a disadvantaged group.

Altogether, these results reinforce the findings of chapter 3, in which the perks of being upper class appeared to be severely conditioned by ascription to an underprivileged ethnicity. The results of both chapters point to privilege as a multidimensional factor. The results of this chapter suggest that on top of being multidimensional, privilege is contextual and responds to social constructs and beliefs that shape the capacity of children to perform in certain subjects. In a nutshell, privilege has multiple faces, which meet to either help or hold back children's educational achievement. To fully understand the IEO we should, therefore, study the privileged groups by taking into account their heterogeneous nature. Because, otherwise, several parts of the IEO puzzle will be missing.

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CHAPTER 6

CONCLUSIONS

What have we learned from this research? Are we closer to understanding the dynamics and complexities of how privilege works? I would like to think that, indeed, we are. In particular, we have learned that privilege is multidimensional and that class advantage has its limits. We have learned that, in fact, privilege is molded and shaped by membership of other social groups. In other words, that privilege has many faces. We have also learned that privilege is dynamic. It seeks to gather advantages and overcome the boundaries that the institutional framework puts in its way. Moreover, it adapts to the needs of the individual who holds it. And, finally, we have learned that privilege is contextual. The same identity can convey an advantage and a disadvantage, it all depends on the context in which is displayed. In sum, we have learned that privilege has different shades, different shapes, and it crawls out of the formal system to seek advantage. I will leave you now with some impressions I have drawn from my four years of PhD research at the European University Institute.

6.1 The four shades of advantage

I started the analysis of the third chapter of the dissertation, *What money cannot buy: the perks of being white in the US educational system* in the same week that the US was outraged by the death of Michael Brown in Ferguson. The news of his death was all over the papers, and became a popular topic of discussion among the EUI researchers. It was a tipping point for US society, and so it was for my dissertation too. I must confess that, initially, I was not interested in how ethnicity affected upper-class Americans. It was irrelevant to me because, surely, money will conquer all in America. Yet, the multiple conversations with my colleagues about what was going on in Ferguson left me with a sense of unease that I could not shake. I was absolutely convinced that Ferguson was the product of a social class conflict rather than ethnic discrimination. In other words, dark-skinned people were more likely to die violently because they were poor, not because they were black or Hispanic. After one of the conversations with my colleagues, I decided to investigate more thoroughly how ethnicity affected the wealthy America. In this manner I would be able to support my claims with evidence in the next conversation, and win the argument once and for all. I turned

out to be terribly wrong. Class privilege does not conquer all, at least not in the US. The most valuable lesson I drew from my initial mistake is that privilege has multiple faces, and some of them are clearer than others.

Privilege is multidimensional because individuals have more than one identity, and these identities convey different (dis)advantages due to historical processes. The findings of the third chapter of the dissertation suggest that being upper class certainly has advantages in education, but these advantages have, at least, four shades. This is because the configuration of the social hierarchy in the US has been outlined by two factors: ethnicity and social class. While chattel slavery conditioned the accumulation of wealth by different ethnicities and social classes, *de jure* (and *de facto*) segregation marked the configuration of social hierarchies within ethnic communities. Being a white upper-class individual is, hence, not the same as being a black upper-class individual, because the formation of both upper classes has followed different paths. Consequently, being upper class reports fewer advantages for the ethnically discriminated communities, such as blacks and Hispanics, than for the historically privileged ethnic group: whites. By focusing on "the upper class" as a whole, scholars have long neglected the different shades of advantage in the US. Nonetheless, this research does not claim that racism is at the core of EIEO nowadays, but it is part of its origins. We can no longer fail and make the same mistake I made in assuming that class and not ethnicity is at the heart of inequalities, because in the US class and ethnic advantage are tightly associated. As the results of the third chapter suggest, there are things that neither class nor money can buy, and the advantage gathered throughout history by different ethnicities is one of them.

Finally, one of the most common comments made when I have presented the US chapter at different conferences has been that this is a particularity of the US. Further research should, therefore, aim to unravel whether this is indeed the case or if, in fact, the theory developed in chapter 3 holds also in different contexts. A comparison with the United Kingdom, Canada and Australia could be the most appropriate for the next steps in my research. These three countries provide us with sufficient historical and institutional variation, yet they are also socio-culturally close to the US. The aforementioned Commonwealth countries, hence, appear to be a good place to start testing the shades of advantage.

6.2 The South Korean conundrum

While the US chapter was the product of a pressing urge to win an argument, and where I ended up proving myself wrong, South Korea was a long riddle that I had tried so many times to solve that the enterprise became both amusing and depressing. Whereas it was fairly simple to track down inequalities in the US, I could barely find any in the Asian country. No matter how hard I tried and tortured the data, household income, parental level of education, father's occupation, children's gender, nothing seemed to make a difference in education. All else equal, children had fairly similar chances. Yet, I found this difficult to believe. Certainly, there was something wrong with my methods, data, and hypothesis. Could South Korea be the land of opportunities that the US never was? Was South Korea the final answer to the meritocracy dogma? Or was privilege, in the end, able to overcome the challenge of such a comprehensive system?

The answer came after many readings and a note found in an old notebook: Lareau's findings suggested that performance triggers different parental reactions by social class. I went back to

the paper and there it was. Privilege is dynamic: Lareau's results pointed that way, and so did the literature on the compensatory effects of education. If this was the case in Europe and the US, it could also be the case for South Korea. The problem was that, in South Korea, the system sets strong boundaries to the parental degrees of freedom. Yet, my instincts refused to believe that privilege was neutralized. Because, what the public system denies, the private one provides. In fact, the emergence of the South Korean private after-school system is the clear response of a very natural process: parents trying to provide their children with the most opportunities. The rational choice was determined by the system, but also by individual needs and talents. Was a dynamic rational choice the answer to my long-standing riddle?

The fourth chapter of the dissertation, indeed, points to individuals as rational choice actors, but whose strategies are dynamic and permeable to the changes in the scenario. In South Korea, individuals try to gather advantage in the after-school system because they cannot obtain it within the formal one. Yet, choices are conditioned by the children's needs and talents. The results suggest that the upper class invest in their children even if they do not perform at a high level in school. They do, however, invest more in private tutoring for their high performers. These results contradict Lareau's findings, yet, they adhere to the South Korean private tutoring logic. Private tutoring is meant to reach the SKY, not to save children from drowning in the bottom of performance. As a matter of fact, the parents of the upper class are better able to prevent failure but they do not use private tutoring to do it. While the upper-class parents tend to invest, the working-class parents need to see proof of its usefulness to keep up the investment. In other words, the working-class children must constantly prove their worth in order to reduce the uncertainty that their parents face regarding their chances of reaching the SKY. When children fail, the uncertainty levels rise and parents therefore invest less. These findings complement the literature on the compensatory effect of social origins on education. We should understand "compensatory effect", however, in a broader sense: while the upper class tries to compensate for failure, the lower classes try to compensate for humble origins. All in all, the results of the fourth chapter give us an important lesson: privilege will try to overcome the boundaries of the system, and it will likely succeed. Yet, when talent is put to work, and parents invest to compensate for humble origins, talent can catch up with the perks of being upper class.

6.3 Stereotype susceptivility

As in the case of ethnicity in the US, I was not initially interested in the effects of gender among upper-class children. It appeared to me that it did not matter that much whether you were a girl or a boy because, if you were upper class, your parents would invest in you regardless of your gender. Yet, there it was, when analyzing the chances to outperform in mathematics and German in the Federal Republic of Germany, gender always appeared as a significant factor in a sea of insignificant coefficients. Because of it, I decided to take a glance at how the results differ within the upper class on account of gender. It did not seem to matter that much, yet, when I rearranged my graphs and dug a little deeper, I noticed a clear pattern: the advantages of class and gender accumulated for the positively stereotyped group, while the double trouble of the two times underprivileged was salient. Thus far, no big surprise. My astonishment came from those individuals who had just once source of advantage: they mimicked each others' chances. After

computing the probabilities several times, and convincing myself that the calculation was right and the results were real, I remembered the results of my third chapter. Could it be that gender, like ethnicity, molds the perks of being upper class, perhaps due to the historical processes and stereotypes associated with biological markers? Still, gender is very different to ethnicity. While ethnicities in the US have been clearly segregated and marked with privilege and disadvantages, gender conveys both advantages and disadvantages for the same individual; it is a matter of the context. And then I learned the third lesson: privilege is multidimensional, dynamic, but also contextual. Stereotypes, whether based on true or false facts, affect the capacity of individuals to perform in different contexts, and gender comprises a great deal of stereotyping.

Whereas boys are believed to be very good in STEM subjects, girls are believed to be especially proficient in the humanities. These widespread gender stereotypes affect the perception that boys and girls have in their capacity to perform in gendered domains, such as mathematics or language. Consequently, their performance will be perked up or hindered depending on whether they are part of the positively or negatively stereotyped gender. These (dis)advantages will add to or collide with the perks of being upper class. As the results of the fifth chapter show, an upper-class child has a higher chance to outperform in the domain in which (s)he is positively stereotyped than an upper-class child with a negative gender stereotype. We can hence infer that the former accumulates two sources of privilege that feed his/her ability to perform, while the latter sees the initial class advantage fade when it comes into collision with a negative gender stereotype. What is more, the latter appears to mimic the chances of being a high achiever of an individual from humbler origins but a positive gender stereotype. Furthermore, a child from an underprivileged class and a negatively stereotyped group is subject to the "double trouble" of class and gender disadvantages, which will severely hinder their chances to outperform in the gendered domain. From these results we can infer that not only must the institutional and personal framework be taken into account, but the context in which privilege must be displayed frames the chances to excel and succeed in education.

All together these results give us a hint of how privilege works, what it is able to overcome and what it is unable to overcome. The upper class is a heterogeneous group, and must be analyzed as such. Because, if not even the rich and highly educated can overcome the hardships that ethnic and gender discrimination put on the way, then who can? If not even the comprehensive and successful South Korean system is able to neutralize privilege, then where can we expect to reach the goal of equality of opportunities in education? Because, only by understanding and acknowledging privilege will we be able to disentangle the brainteaser of IEO.

APPENDIX A

This appendix corresponds to chapter 2, and it comprises the figures that illustrate the educational structure of the three education systems selected for the analysis: South Korea, the United States, and Germany.

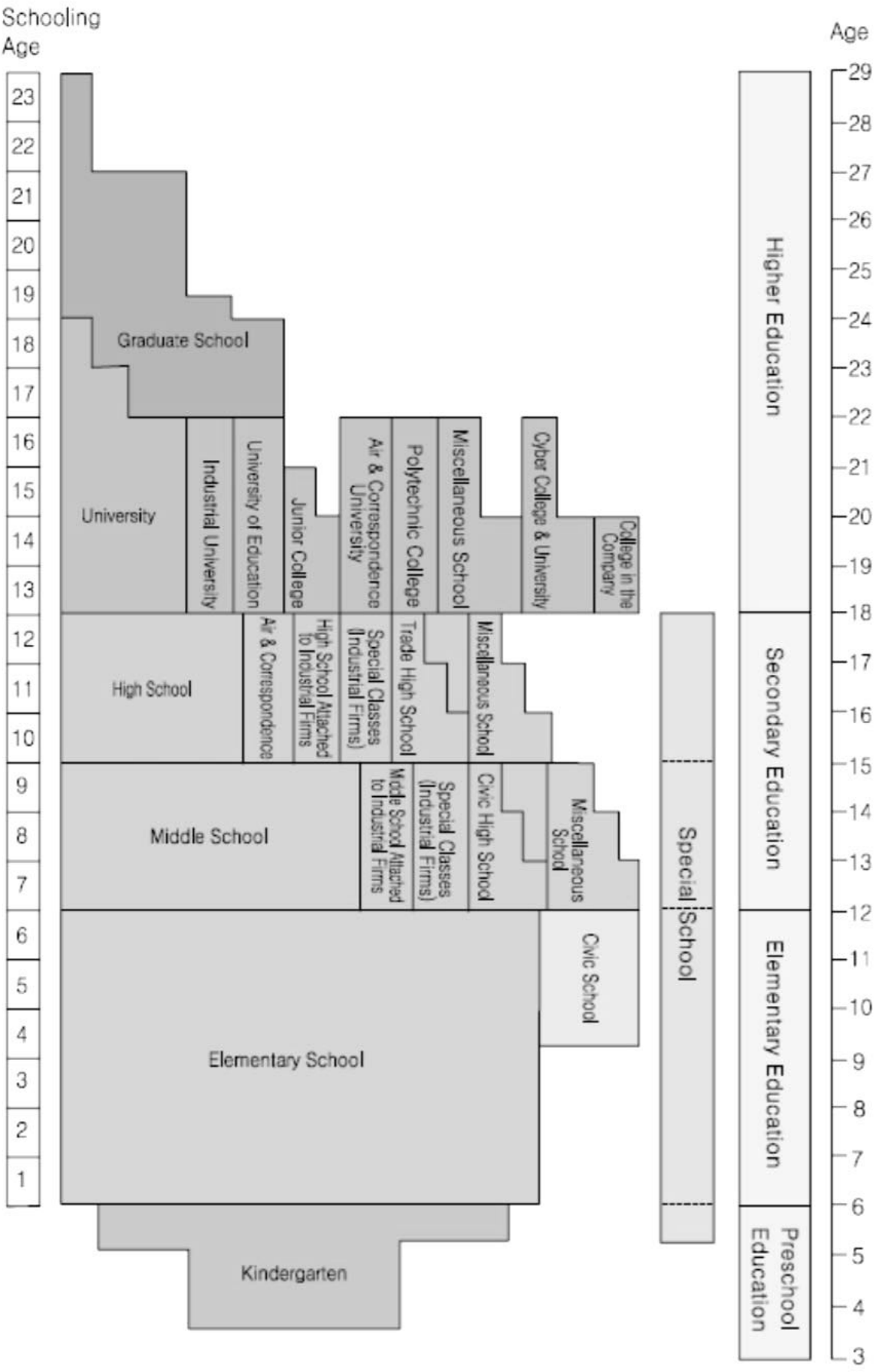

Figure A.1: Structure of the Republic of Korea education system. Source: UNESCO.

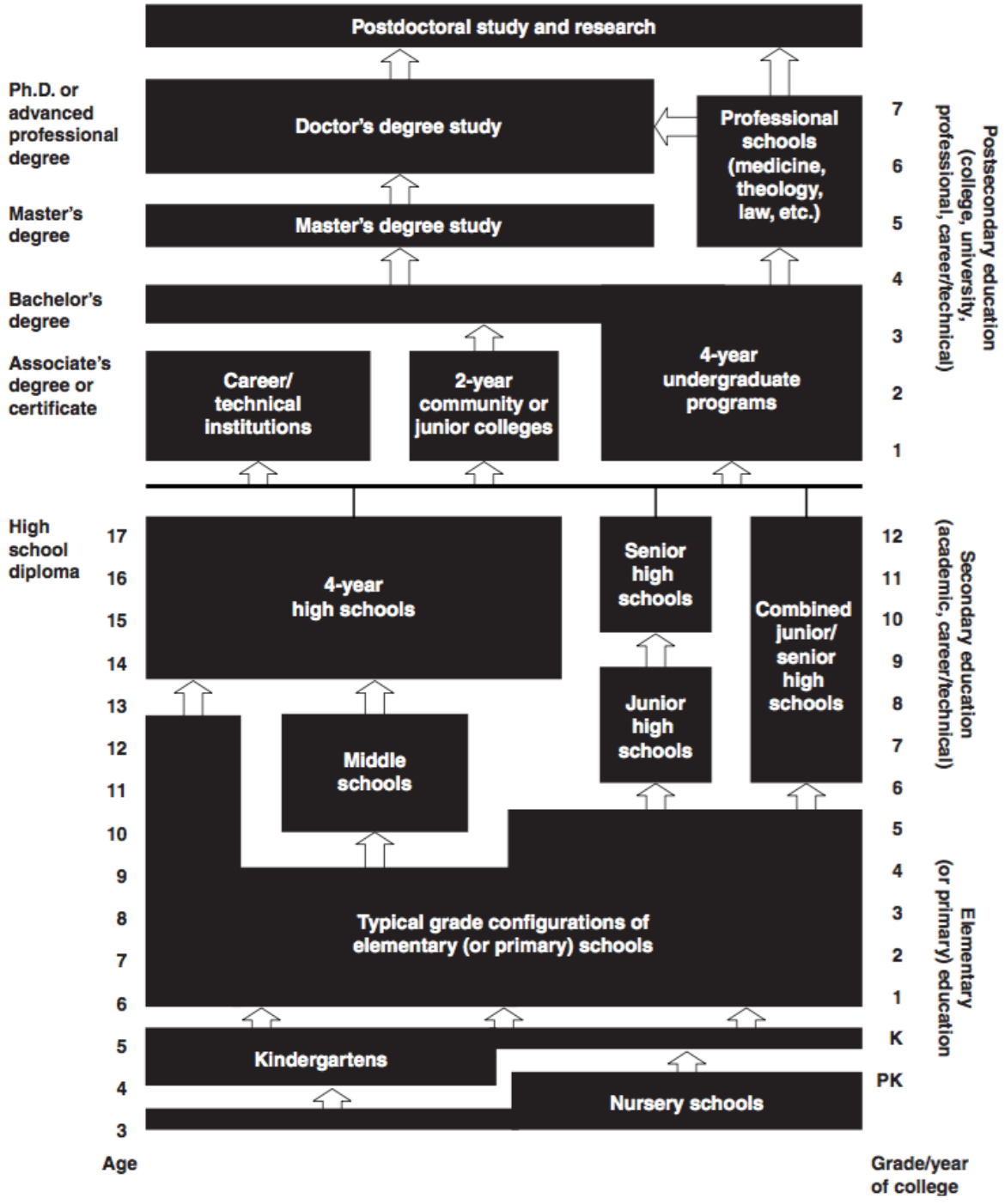

Figure A.2: Structure of the United States of America education system. Source: UNESCO.

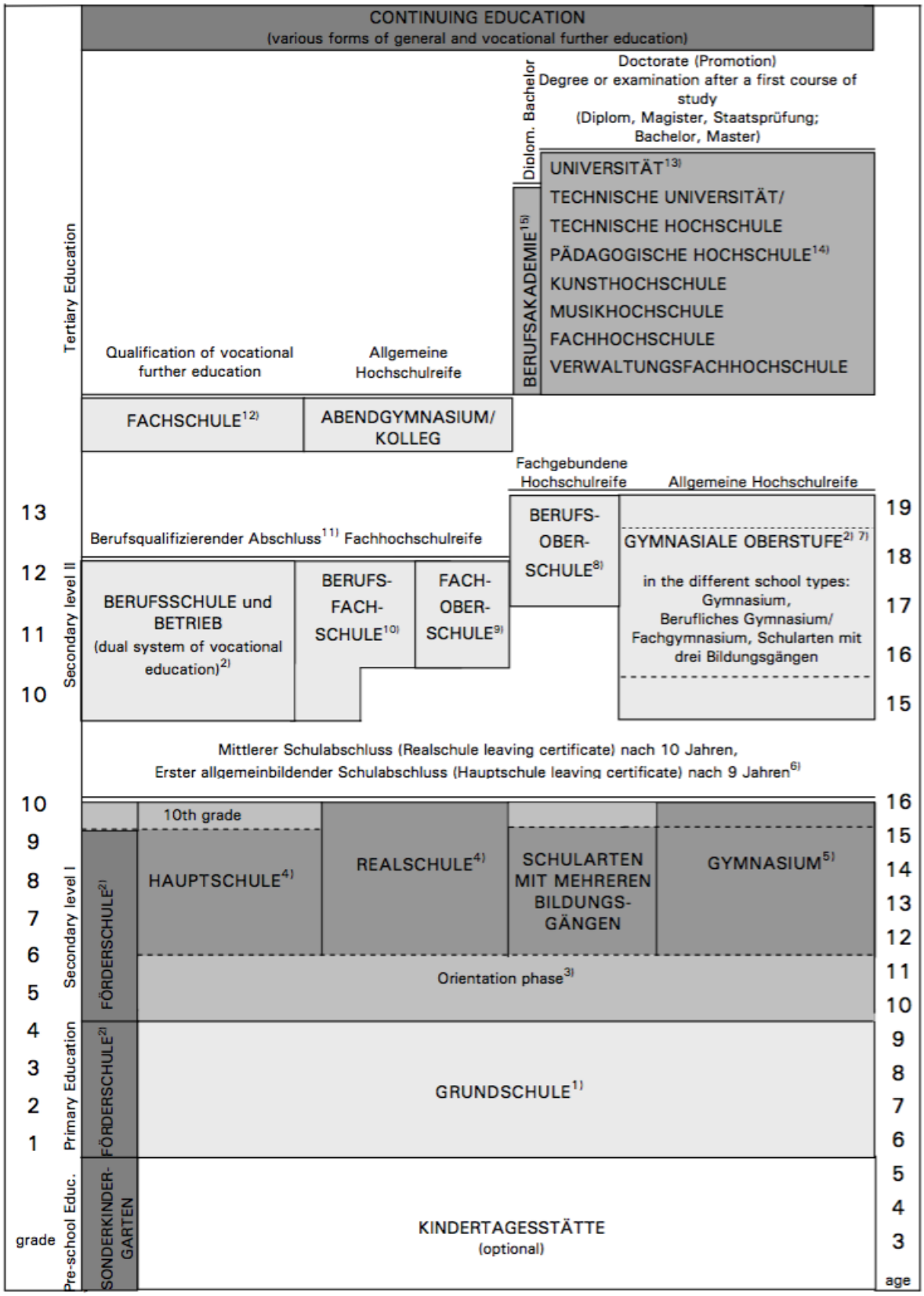

Figure A.3: Structure of the Federal Republic of Germany education system. Source: UNESCO.

APPENDIX B

APPENDIX B

Appendix B includes the probit longitudinal model upon which the predicted probabilities presented in chapter 3 have been computed.

The analysis has been performed by implementing tWO simple probit longitudinal regressions: one in which "success" has been considered to be at the top quartile of performance in mathematics, and "failure" is understood as a lower performance; and a second regression in which the dependent variable takes value 1 if the student is at the bottom quartile of performance in mathematics, and 0 otherwise.

As it can be seen in the model AB1, being at the top quartile of performance (dependent variable 1) has been modelled as a function of:

1. Children's ethnicity (white ethnicity as reference category).
2. Parental Human Capital (low PHC as reference category).
3. Household income of 2001 (lower than 25.000 dollars as reference category). In this case, information regarding the household income is only available in the first wave. Hence, income has been imputed for the second wave.
4. Family composition (biparental families as reference category).
5. Gender of the child (male as a reference category).
6. Generational status (first generation immigrants as reference category).
7. Percentage of the schools' student body in the free-lunch / reduced price program (lower than 6% as reference category)

Further, being at the bottom quartile of performance (dependent variable 2) has been modelled as a function of:

1. Children's ethnicity (white ethnicity as reference category).

Table AB.1.Longitudinal Probit Model. Top and bottom performers

	Top performer	Bottom achiever
Ethnicity		
Asian	0.737***	-0.186
	(0.149)	(0.161)
Hispanic	-2198	1.896***
	(0.1498)	(0..111)
Black	-1.297***	1.577***
	(0.124)	(0.119)
PHC		
Medium	0.154	-0.562***
	(0.117)	(0.114)
High	1.326***	-0.937***
	(0.085)	(0.085)
Income		
25.001 to 50.000	0.736***	-0.750***
	(0.113)	(0.100)
50.001 to 75.000	1.156***	-1.194***
	(0.127)	(0.118)
$75,001-$100,000	1.271***	-1.532***
	(0.141)	(0.142)
$100,001 or more	1.972***	-2.099***
	(0.147)	(0.173)
Family composition		
Reestructured	-0.709***	0.525***
	(0.103)	(0.100)
Single-parent	-0.370***	0.234*
	(0.098)	(0.097)
other	-1.349***	1.007***
	(0.222)	(0.180)
Female	-0.586***	0.214**
	(0.069)	(0.071)
Generational status		
Second generation	0.246	-0.527***
	(0.147)	(0.147)
Third generation /native	-0.695***	-0.329*
	(0.124)	(0.141)
Freelunch program		
6 to 10%	-0.132	0.317**
	(0.084)	(0.112)
11 to 20%	-0.379***	0.630***
	(0.079)	(0.095)
21 to 30%	-0.593***	0.761***
	(0.089)	(0.101)
More than 30	-0.806***	1.105***
	(0.083)	(0.091)
Constant	-0.848***	-2.210***
	(0.178)	(0.184)
Sigma	2.752	2.770
	(0.049)	(0.068)
rho	0.883	0.884
	(0.005)	(0.005)
Number of observtions	20685	20685

* p<0.05, ** p<0.01, *** p<0.001

Std. Errors between parentesis

2. Parental Human Capital (low PHC as reference category).

3. Household income of 2001 (lower than 25.000 dollars as reference category). In this case, information regarding the household income is only available in the first wave. Hence, income has been imputed for the second wave.

4. Family composition (biparental families as reference category).

5. Gender of the child (male as a reference category).

6. Generational status (first generation immigrants as reference category).

7. Percentage of the schools' student body in the free-lunch / reduced price program (lower than 6% as reference category).

The predicted probabilities for different type of individuals are presented in table 3.7 (for upper class children) and table 3.8 (for lower class children). The main explanatory variables in both cases is parental human capital and child's ethnicity. The other variables have been introduced as control variables.

APPENDIX C

APPENDIX C

Appendix C comprises the different models upon which the predicted probabilities for different individuals have been computed in chapter 4.

C.0.1 Dynamic binary response models: a brief introduction

There are a great number of studies analyzing the use and effects of Private Tutoring (PT) across countries (H. Park et al., 2016). Due to state dependence, unobserved heterogeneity, and initial conditions issues, however, it is hard to disentangle to what extend the results are biased and respond to real causality mechanisms. There are different ways to deal with the aforementioned challenges, such as propensity score matching (Y. Choi & Park, 2016), instrumental variables, etc. I have, however, tried to take advantage from the longitudinal nature of the data provided by KYPS, and followed the approach proposed by Wooldridge (Wooldridge, 2005).

This approach suggests the following. First, we face the initial conditions challenge. In this regard, individuals are not observed from the beginning of their lives, and when data starts to be gathered there are some individuals already more likely to be enrolled in PT, or being top/bottom achievers in their class than others. Wooldridge proposes *to model the distribution of the unobserved effects conditional on the initial value of any exogenous explanatory variable* (p.4) (Wooldridge, 2005). This is to say, to include a variable that captures the effect of the initial state from which individuals are departing. Hence, in model AC1 this means to include a variable that accounts for the enrolment status of individuals at t_0 (the first wave), but also whether they were top students (since, in South Korea, top students tend to be more likely to enrol); in model AC2 this means to include a variable regarding whether a student was at the top 10% of their class at t_0; finally, in model AC3 it implies to include a variable that captures whether a student was at the bottom 20% of their class in t_0. Second, unobserved (time-invariant) heterogeneity will lead to persistence over time in a given category, even if we control for all observable characteristics and there is no true state dependence. Furthermore, state dependence implies that experience in a given position modifies behavior in the future so as to make that position more likely to take place. Hence, in order to control for state dependence a lagged variable of the dependent variable has been included

in the analysis. This variable has been also used to calculate what happens regarding children's enrolment in PT, for example, when students were top achievers but they are not at the current state, thus approximating the effects of an unstable performance on parental choices. Finally, as the correlation of the individual effects with explanatory variables is quite likely, the strategy followed is to "model" the individual effect as a function of individual-specific mean values of x. For example, this means to include the mean value of investment in PT across waves.

Hence, in model AC1 (the predicted probabilities of which are displayed in figure 4.2) the dependent variable "enrolled in PT" has been modelled as a function of whether enrolled last year, whether the student was at the top 10% of his/her class, gender, parental expectation, occupational prestige orientation, and (to estimate the individual effect) mean enrolment in PT, mean parental expectations, and mean occupational prestige orientation. Finally, to account for the initial conditions issue, two variables capturing whether a child was at the top 10% of her class at t_0, and whether (s)he was enrolled in PT att_0 have been included.

In model AC2 (the predicted probabilities of which are displayed in table 4.6 and table 4.7), the dependent variable "achieving at the top 10% of his/her school class" has been modelled as a function of whether the student was at the top of his/her class the previous year (lagged variable), gender, parental expectations, investment in PT, and (to account for the individual effect) mean parental expectation and mean investment in PT. Besides, a variable including the initial condition (whether the student was already at the top of the class at t_0) has been included.

In model AC3 (the predicted probabilities of which are displayed in table 4.7) the same variables have been included, but in this case substituting the variables regarding top achievers with the ones referring to bottom performers, since it is the dependent variable of interest. Each model has been estimated for children of upper class and lower class in two different regressions.

Finally, one my wonder why prestige orientation has not been included in the last two models while it was the case in AC1. The main reason is that PT is used by families as a tool to boost their children's performance. Hence, prestige orientation may be important when taking the decision of whether to enrol children in PT or not. Yet, once parents are investing in PT, I consider prestige orientation to lessen its relevance. In addition, the variable "prestige orientation" was not statistically significant, and its effect did not appear to alter much the results obtained. Hence, in order to make the analysis as simple as possible I left out this variable of models AC2 and AC3.

Table AC.1.Dynamic RE probit model. Private tutoring enrolment

	Student A	Student B	Student C	Student D
PT-M t-1	-0.340	-0.973	0.169	0.220**
	(0.416)	(0.160)	(0.291)	(0.079)
Top 10 t-1	0.026	0.037	-0.208	0.169
	(0.0297)	(0.297)	(0.261)	(0.174)
Female	0.159	0.005	0.019	0.033
	(0.292)	(0.121)	(0.252)	(0.068)
Parental expectations	0.244	0.025	0.178	0.109
	(0.246)	(0.099)	(0.236)	(0.064)
Occupational prestige	-0.820	0.030	-0.137	-0.012
	(0.505)	(0.106)	(0.212)	(0.059)
Mean enrollment in PT-M	5.018***	4.429***	4.631***	3.747***
	(0.000)	(0.334)	(0.638)	(0.170)
Top 10 at t_0	0.735*	0.135	0.762	-0.161
	(0.364)	(0.238)	(0.319)	(0.162)
Private tutoring at t_0	-1.040*	-0.874*	-1.270*	-1.063*
	(0.504)	(0.230)	(0.397)	(0.108)
Mean Parental expectations	-0.803	0.067	0.098	-0.121
	(0.504)	(0.172)	(0.400)	(0.103)
Mean occupational prestige	0.393	0.113	-0.261	-0.039
	(0.410)	(0.165)	(0.353)	(0.095)
Constant	-1.381	-3.087***	-2.858***	-2.063***
	-1.373	(0.469)	(0.925)	(0.249)
Sigma	0.0004	0.000	0.001	0.000
	(0.094)	(0.006)	(0.025)	(0.0004)
rho	2.25	1.77	2.43	1.11
	(0.000)	(5.68)	(0.000)	(3.02)
Number of observations	211	757	255	2.236

* p<0.05, ** p<0.01, *** p<0.001

Std. Errors between parentesis

Table AC.2.Dynamic RE probit model. Top achievers

	Student A & B	Student C & D
Top t-1	1.464***	1.358***
	(0.197)	(0.121)
Female	-0.066	-0.0492
	(0.133)	(0.077)
Parental expectations		
Less than High School	REF	REF
	-	-
High School	0.946	-0.193
	(0.916)	(0.457)
Junior College	-0.468	-0.041
	(0.510)	(0.300)
4 year college	-0.534	0.012
	(0.0359)	0.283
Post graduate	-0.367	0.140
	(0.386)	(0.312)
Investment in PT	0.005*	0.004
	(0.002)	(0.001)
Mean Parental expectations	0.273	0.219*
	(0.175)	(0.107)
Top 10 at t_0	0.888**	0.365*
	(0.283)	(0.150)
Mean investment	-0.005	--0.004***
	(0.002)	(0.370)
Constant	-2.10***	-2.268***
	(0.562)	(0.370)
Sigma	0.581	0.338
	(0.191)	(0.132)
rho	0.252	0.102
	(0.124)	(0.072)
N	1197	3107

* p<0.05, ** p<0.01, *** p<0.001

Std. Errors between parentesis

Table AC.3.Dynamic RE probit model. Bottom 20%

	Student A & B	Student C & D
Bottom t-1	1.185***	1.496***
	(0.211)	(0.109)
Female	-0.214	-0.133*
	(0.144)	(0.0784)
Parental expectations		
Less than High School	REF	REF
High School	2232**	0.053
	(0.819)	(0.309)
Junior College	1.208	-0.297
	(0.644)	(0.247)
4 year college	0.737	-0.063
	(0.615)	(0.236)
Post graduate	0.582	(-0.117)
	(0.658)	(0.287)
Investment in PT	0.001	-0.00485
	(0.002)	(0.0025)
Mean Parental expectations	-0.074	-0.179
	(0.194)	(0.097)
Bottom 10 at t_0	0.443*	0.268*
	(0.211)	(0.111)
Mean investment	-0.002	-0.0005
	(0.003)	(0.0034)
Constant	-2.28***	-1.10***
	(0.693)	(0.0278)
Sigma	0.0013	0.0008
	(0.019)	(0.008)
rho	1.7	6.63
	(0.000)	(0.000)
N	1197	3107

* p<0.05, ** p<0.01, *** p<0.001

Std. Errors between parentesis

APPENDIX D

APPENDIX D

Appendix D comprises the different longitudinal probit models that have served as a basis to compute the predicted probabilities presented in chapter 5.

First, the model of table AD1 refer to the models used in order to calculate the predicted probabilities in figure 5.3. More precisely, three separated probit regressions have been computed, one per educational track (each track constitutes a dependent variable). Hence, in the first column the coefficients of the regression with Hauptschule enrolment as dependent variable are displayed; in the second column we can find the coefficients of the regression with Realschule as main dependent variable and; finally, in the third column we can find the coefficients of the regression in which Gymnasium was chosen as dependent variable. In each regression, the dependent variable takes the value 1 if individuals are enrolled in that specific track, and 0 if they are not.

Hence, each track has been modelled as a function of Parental Human Capital (low PHM as reference category), generational status (natives as reference category), gender (males as reference category) and family composition (biparental families as reference category). In this regard, only PHC and appears to be a statistically significant factor.

Table AD2 corresponds to the longitudinal probit regressions computed in order to calculate the predicted probabilities shown in figures 5.6 and 5.7. More precisely, model 1 corresponds to the former and model 2 corresponds to the latter. The dependent variable in both takes value 1 if an individual is a high performer in Mathematics, and value 0 otherwise. The main difference between both models, is that in model 1 I use the Father Occupational Status (FOS) as a main explanatory variable, while in model 2 I use Mother Occupational Status (MOS) as main explanatory variable. However, neither MOS nor FOS appear to have a statistically significant effect.

In model 1 being a high performer in Mathematics is modelled as a function of mother human capital (low MHC as reference category), father human capital (low FHC as a reference category), FOS (agricultural as a reference category), and gender of the child (male as reference category). In addition, family composition, generational status, and academic track have been used as control variables that have been set at the "most advantageous" case scenario to compute the predicted probabilities displayed in the aforementioned figures. In model 2, FOS has been substituted by MOS, while all the other explanatory variables remain the same.

Table AD.1. Probit regression: Academic track

	Hauptschule	Realschule	Gymnasium
PHC			
Low (REF)			-
Medium	-0.338**	-0.957***	0.969***
	(0.005)	(0.000)	(0.000)
Lower Tertiary	-0.698***	-1.338***	1.447***
	(0.001)	(0.000)	(0.000)
High Tertiary	-0.972***	-1.608***	1.760***
	(0.000)	(0.000)	(0.000)
Generational Status			
Native (REF)			-
First generation	0.251	0.302	-0.384*
	(0.141)	(0.179)	(0.024)
Second generation	-0.0735	0.136	0.0365
	(0.451)	(0.299)	(0.699)
Third generation	0.0128	0.342	-0.161
	(0.955)	(0.243)	(0.467)
Female	-0.0368	-0.111	0.106
	(0.593)	(0.277)	(0.115)
Family composition			
Biparental (REF)			-
Monoparental	-0.121	0.456	-0.0323
	(0.572)	(0.074)	(0.869)
Reconstructed	-0.184	0.619*	-0.121
	(0.394)	(0.011)	(0.537)
Constant	-0.174	-0.552***	-0.698***
	(0.151)	(0.000)	(0.000)
N	1689	1689	1689

* p<0.05, ** p<0.01, *** p<0.001

Std. Errors between parentesis

The table AD3 corresponds to the longitudinal probit regressions computed in order to calculate the predicted probabilities shown in figure 5.4 and figure 5.5. More precisely, model one corresponds to the former, and model 2 corresponds to the latter. The dependent variable is the same in both cases and it takes value 1 if students are high performers in German, and 0 otherwise. The main difference between both models is, again, that in model 1, I use FOS as a main explanatory variable. In contrast, I use the MOS as main explanatory variable of model 2. However, again, neither FOS nor MOS appear to be statistically significant.

Briefly, in model 1 being a high performer in German subject is modelled as a function of mother human capital (low MHC as reference category), father human capital (low FHC as a reference category), FOS (agricultural as a reference category), and gender of the child (male as reference category). Besides, family composition, generational status and academic track have been used as control variables that have been set at the "most advantageous" case scenario to compute the predicted probabilities displayed in the aforementioned figures. In model 2, FOS has been substituted by MOS, and all the other explanatory variables have remain the same.

Finally, table AD4 corresponds to the longitudinal probit regression computed in order to estimate the predicted probabilities displayed in figure 5.8. In this manner, the dependent variable is whether a child has been identified with special needs. This variable takes value 1 when the child has, indeed, been identified as having special needs, and 0 otherwise. Parental human capital (low as a reference category), generational status (native as reference category), gender of the child and family composition (biparental as reference category) have been included as explanatory variables.

Table AD.2. Longitudinal probit regression: High performance in Mathematics

	Model 1	Model 2
MHC		
Low (REF)	-	-
Medium	0.0577	-0.113
	(0.196)	(0.205)
Lower Tertiary	0.207	-0.0748
	(0.288)	(0.313)
High Tertiary	0.275	0.118
	(0.246)	(0.260)
FHC		
Low (REF)	-	-
Medium	-0.0594	-0.0429
	(0.153)	(0.156)
Lower Tertiary	0.127	0.207
	(0.222)	(0.209)
High Tertiary	0.387	0.353
	(0.239)	(0.196)
MOS		
Agricultural		ref
		-
Manual		-0.222
		(0.551)
Technical & Engineer		-0.0967
		(0.553)
Services		-0.222
		(0.502)
Commerce & administration		-0.237
		(0.496)
Manager		-0.447
		(0.550)
FOS		
Agricultural	ref	
	-	
Manual	-0.0351	
	(0.391)	
Technical & Engineer	-0.0345	
	(0.398)	
Services	-0.021	
	(0.408)	
Commerce & administration	0.119	
	(0.396)	
Manager	-0.015	
	(0.402)	
Female	-0.581**	-0.690***
	(0.199)	(0.160)
Family composition	-0.0910	-0.235
	(0.201)	(0.221)
Generational Status	-0.126	0.131
	(0.076)	(0.073)
Academic track	1.007***	1.069***
	(0.310)	(0.219)
Constant	-3.527**	-3.169***
	-1.148	(0.800)
Sigma	0.971	1.135
	(0.573)	(0..345)
rho	0.485	0..563
	(0..295)	(0.149)
Number of observations	1621	1808

* p<0.05, ** p<0.01, *** p<0.001

Std. Errors between parentesis

Table AD.3. Longitudinal probit regression: High performance in German

	Model 1	Model 2
MHC		
Low (REF)		
Medium	0.720	0.720*
	(0.373)	(0.348)
Lower Tertiary	0.816	0.814
	(0.457)	(0.450)
High Tertiary	1.179*	1.143**
	(0.514)	(0.437)
FHC		
Low (REF)		
Medium	-0.146	-0.061
	(0.184)	(0.194)
Lower Tertiary	-0.210	-0.085
	(0.257)	(0.252)
High Tertiary	-0.00420	0.112
	(0.234)	(0.226)
MOS		
Agricultural		ref
		-
Manual		0.428
		(0.856)
Technical & Engineer		1.048
		(0.838)
Services		0.606
		(0.787)
Commerce & administration		0.791
		(0.777)
Manager		0.877
		(0.817)
FOS		
Agricultural	ref	
	-	
Manual	0.300	
	(0.547)	
Technical & Engineer	0.487	
	(0.565)	
Services	0.463	
	(0.574)	
Commerce & administration	0.584	
	(0.572)	
Manager	0.485	
	(0.567)	
Female	0.583*	0.637***
	(0.226)	(0.185)
Family composition	-0.730	-0.511
	(0.405)	(0.325)
Generational Status	-0.0225	0.029
	(0.077)	(0.083)
Academic track	1.417**	1.825***
	(0.507)	(0.432)
Constant	-6.088**	-8.163***
	(2.226)	(1.919)
Sigma	1.09	1.327
	(0.673)	(0.437)
rho	0.544	0.637
	(0.305)	(0..152)
N	1685	1878

* p<0.05, ** p<0.01, *** p<0.001

Std. Errors between parentesis

Table AD.4. Longitudinal probit regression: Identification of special needs	
	coef
PHC	
Low (REF)	ref
Medium	-1.201***
	(0.262)
Lower Tertiary	-1.876***
	(0.516)
High Tertiary	-2.598***
	(0.376)
Generational Status	
Native (REF)	ref
	ref
First generation	0.834*
	(0.348)
Second generation	-0.572*
	(0.240)
Third generation	-0.376
	(0.545)
Female	-0.634***
	(0.175)
Family composition	
Biparental (REF)	ref
	ref
Monoparental	0.461
	(0.390)
Reconstructed	0.576
	(0.366)
Constant	-0.929***
	(0.242)
Sigma	1.859
	(0.278)
rho	0.775
	(0.052)
N	2634

* p<0.05, ** p<0.01, *** p<0.001

Std. Errors between parentesis